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The political ecology of small-scale gold mining reform in Guyana: resource competition, formal institutions, and green development pathways

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Abstract

This thesis operationalizes a political ecology research programme to examine the different dimensions of environmentally-oriented small-scale gold mining reform within Guyana's unique mining setting. The study is based on a year of fieldwork in Guyana and employs a mix of spatial, quantitative, and qualitative data – including multiple Geographic Information Systems (GIS) maps, mineral property data, hundreds of secondary documents, three ethnographic site-based case studies, and 143 semi-structured interviews.

The research approach examines the small-scale reform agenda in Guyana as a 'storyline', enabling a view of the policy agenda as not only embodying structures and institutions, but as also predicated on particular assumptions about social and ecological reality. By highlighting the contrasts between the ways policies are perceived and experienced by a range of actors on the ground with the abstract policy framings, it offers an analysis of the root causes of policy failure, conflict, and economic and social injustice.

The thesis identifies a range of powerful (and under-acknowledged) political phenomena in the mining landscape that threaten the legibility, legitimacy, and effectiveness of the reform approach. These phenomena relate to contested local understandings of environmental change; unresolved contentions among poorer miners and indigenous groups over the structural basis of formal titles; emerging forms of market-mediated exclusion; and inherent 'informality' amidst intense resource competition, state fragility and remote geographies.

The persistence of such phenomena offers a reminder that mining reform is not merely a 'legal-institutional' process but an inherently 'political' one that entails contestation over how social and ecological relationships are defined and managed. While showing how a political ecology approach enables engagement with a range of normative concerns, this thesis also makes specific contributions to current academic and policy debates on small-scale gold mining governance, offering new insights on patterns of informality, injustice, and exclusion.

Declaration

I hereby declare that this thesis has not been, and will not be, submitted in whole or in part to this or any other University for the award of any other degree.

Signature: _____

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List of Abbreviations

ADF – Amerindian Development Fund

ALT – Amerindian Land Titling

APA – Amerindian People's Association

APNU – A Partnership for National Unity

ASM – Artisanal and small-scale mining

EITI – Extractive Industry Transparency Initiative

EPA – Environmental Protection Agency

FAO – Food and Agricultural Organization

FCPF – Forest Carbon Partnership Facility

FLEGT – Forest Law Enforcement, Governance and Trade

FPIC – Free Prior and Informed Consent

FPP – Forest People's Programme

GEF – Global Environmental Facility

GENCAP –The Guyana Environmental Capacity Development Mining Project

GFC – Guyana Forestry Commission

GIS – Geographic Information Systems

GGB – Guyana Gold Board

GGDMA – Guyana Gold and Diamond Miners Association

GGMC – Guyana Geology and Mines Commission

GHRA – Guyana Human Rights Association

GLSC – Guyana Lands and Surveys Commission

GMSTI – Guyana Mining School and Training Centre

GRA – Guyana Revenue Authority

GRIF – Guyana REDD+ Investment Fund

GWMO – Guyana Women Miners Organization

IADB – Inter-American Development Bank

INGO – International Non-Governmental Organization

IMF – International Monetary Fund

LCDS – Low Carbon Development Strategy

LSM – Large-scale mining

MNRE – Ministry of Natural Resources and the Environment

MOU – Memorandum of Understanding

MP – Medium-scale mining permit

MRVS – Monitoring, Reporting and Verification System

NGO – Non-Governmental Organizations

NICFI – Norway International Climate and Forest Initiative

NORAD – Norwegian Agency for Development Cooperation

NTC – National Toshaos Council

PES – Payment for Ecosystem Services

PPMS – Medium-scale Prospecting Permit

PPP/C – People's Progressive Party/Civic

REDD+ – Reducing Emissions from Deforestation and Forest Degradation

SLUC – Special Land Use Committee

TIP – Trafficking in Persons

UNDP – United Nations Development Programme

UNFCCC – United Nations Framework Convention on Climate Change

WHO – World Health Organization

WWF – World Wildlife Fund

Glossary

Backdam – A remote or rural area in Guyana; more specifically, a mining area

Bare dredge – A small, mechanized mining operation that has no earth-moving equipment

Batel – A large concave pan used for sifting gold from sand

Benching – The safety measure of building staggered steps out from a mining pit in order to reduce the height of the pit wall and the amount of overburden on the pit edge

Block – The local term for a medium-scale mining property

Bore – To dig for gold

Box – The sluice box

Centrifuge – An expensive piece of machinery used for gravitational gold recovery

Charlie – An excavator

Coastlander – the Amerindian term for a non-Amerindian Guyanese person

Cutter head – A type of unmanned river dredge head used for breaking up river bed and bank material that then gets sucked up to the sluice on board the *draga*

Diver – Someone manning the river dredge's underwater nozzle

Draga – A modern and powerful type of river dredge, developed in Brazil

Dredge – A mechanized set-up for alluvial mining involving the use of hydraulic mining methods supplemented by a diesel-powered gravel pump that feeds a locally-constructed wooden sluice box

Garimpeiro – The Brazilian term for an independent mineral prospector

Getting a position – The process of entering into a contract with a landowner to begin mining on their property

Ground sluice – A gravitationally-fed box for catching the gold-bearing slurry

Gyal – Woman

Interior – The hinterland in Guyana, essentially referring to all areas away from the coast

Jet man – Someone who mans the high-pressured hose that is used to break off material from a mining pit

Land dredge – A dredge set-up that uses gravity rather than an engine to feed to sluice box

Landing – A commercial centre servicing a mining area – it can range from a single shop and a bar to a small town, such as Mahdia

Landlordism – The phenomenon of a landlord-dominated mining sector

Maiden land – Previously-unmined land

Marrack man – Someone who mans the suction pump in the mining pit that is used to suck loosened material up to the sluice box

Mat – The carpeted material used in the sluice box to catch heavier gold particles during dredging

Missile dredge – A type of river dredge that uses a diver-less nozzle used to suck up unconsolidated gold-bearing gravel from the river bed and banks.

Overburden – The unwanted material that is extracted to make the mining pit

Percentage – The payment made to the landowner in return for working on their land

Pit – The depressed area where mining takes place

Pit man – Someone who works in the mining pit, typically removing debris such as stones and branches so that the jet man has clear access to the targeted gold deposit

Pork knocker – An independent gold prospector, named after the original miners in Guyana who were famous for living off dried pork for long periods in the jungle

Ranger – Someone paid to monitor mining operations on behalf of a private landlord

River dredge – A mechanized dredging operation that targets mineral deposits in the riverbed and banks

Settling pond – A pond built for holding tailings material. Also known as a *Tailings pond*

Shout – A ‘gold rush’

Silver – A slang term for mercury

Syndicate – An organized group of miners

Tailings – The slushy waste material of the dredging process

Toshao – An elected Amerindian village leader

Tributor – Someone working for a percentage on a landlord’s property

Warden – Local term for GGMC officer

Wash down – The name for the process of emptying the sluice box in order to remove the captured gold, which typically happens every few days

Workground – The local term for the area where the mining pit is located

Chapter 1: Introduction

1.1. Guyana, gold mining and environmental reform

The small-scale gold mining sector has emerged over the past ten years in Guyana – a small, heavily-forested country in the north-east corner of South America – as the main engine of economic growth amidst growing global demand for minerals and rising mineral prices (Hilson & Laing 2017a). Facilitated by the increased availability of cheaper mining machinery, many new entrants have been attracted into the sector, turning the majority of Guyana's forested land area into a mosaic of mineral properties (Bulkan & Palmer 2016). By 2017, gold accounted for almost 60% of Guyana's export earnings and a quarter of its Gross Domestic Product (GDP) (Guyana Bureau of Statistics 2017).

The sector has however also begun attracting attention as the main driver of deforestation and a range of other environmental problems in the context of a growing international focus on forests and fresh water and emerging frameworks (such as Reducing Emissions from Deforestation and Degradation, or REDD+[1]) for addressing these issues (Hirons 2015). Focus on the environmental impacts of the mining sector in Guyana has been particularly stimulated by the increasing recognition of the importance of the Guiana Shield as one of the world's last remaining major unfragmented tropical forests; by Guyana's explicit avowal of a 'Low Carbon' or 'Green State' development pathway; by its concomitant participation in REDD+ and Forest Carbon Partnership Facility (FCPF)[2] programmes; and by growing political and environmental agitation among Guyana's largely forest-dwelling Amerindian population for improved environmental governance.

This attention has led the Guyanese government to focus increasingly on reforming the gold mining sector in order to align the activities of small-scale miners with emerging global environmental norms and benchmarks (IADB 2015). The reform interventions have ranged from new technical requirements for tailings management, to projects aimed at phasing out mercury usage (IADB 2017). For a range of reasons, enforcing these new rules has been a major challenge for the state, which has struggled to contain such a

[1] REDD+ is a Payment for Ecosystem Services (PES) modality that emerged out of the United Nations Framework Convention on Climate Change (UNFCCC) framework.
[2] The FCPF is the World Bank-funded REDD+ framework.

dynamic and unruly sector. As a result, it has resorted to more intense state enforcement and monitoring of the boundaries and practices constituting the sector.

But while the state has focused on disciplining mining activity through further regularization, a range of other fractious debates among miners, other land users, and the state have been taking place. For many smaller miners, the latest 'green' reform agenda has landed in a context in which they were already struggling to survive as a result of the non-availability of land, exploitative structural relationships with landowners, underlying and unresolved tenure conflict with indigenous groups, declining state support for miners, rising safety and administrative requirements, fluctuating world gold prices, and a general culture of lawlessness and criminality (Stabroek 2014b; Kaieteur News 2017c, 2017f). While facing new obligations and requirements, there has been minimal accompanying support for smaller miners, in spite of a few isolated donor projects (Kaieteur News 2016e).

For many smaller scale miners, the mainstream approach to 'dealing with mining' through formal titles and regulatory and technological measures therefore neither addresses their core political grievances, nor responds to their socio-economic needs. Among these constituencies, there is a general feeling of dismay towards the state and the international organizations who appear to them to be engaging in a war on small-scale mining, in spite of the sector's proven contributions to national development and local livelihoods (Kaieteur News 2017e).

For Amerindian communities, many of which lie within popular mining areas, the state's approach is meanwhile largely predicated on what they see as an unjust and illegitimate legal and tenure system that systematically fails to recognize or protect their rights and interests (Dooley & Griffiths 2014). The state's enforcement efforts meanwhile appear perpetually hamstrung by a pervasive collusion between miners and officers, with abuses and transgressions routinely being overlooked in exchange for bribes. With state attention turning to oil, many believe that an opportunity to take advantage of climate finance to define a new approach to the mining-environment relationship is ebbing away.

1.2. Research motivation

Given this range of diverse concerns within and around the mining sector in Guyana that implicate questions of environmental management, social justice, and epistemological recognition, a broad research programme is evidently required. And yet, the existing

literature on artisanal and small-scale mining (ASM) reform, while making important empirical and theoretical contributions, often falls short of the kind of capacious analytical framework that is sought in this case.

The more policy-oriented work, for example, that concentrates on identifying the various obstacles to coordinated reform efforts (such as barriers to miner participation and limited state capacity), often under-analyses the social justice dimensions of reform and leaves epistemological assumptions underlying reform unquestioned. Moreover, because it tends to be predicated on a largely economistic ontology, it under-considers the perspectives of those communities for whom land and resources have alternative meanings and valuations. Work in the more critical tradition goes some way to correcting these oversights in recognizing the often-exclusionary nature of the process of moving significant amounts of 'illegal' mining activity into the 'formal' sector. However, as with the 'policy friendly' work, it tends to treat non-human natures as an inanimate 'backdrop' to social struggles. Furthermore, it tends to under-engage with the more technical and pragmatic dimensions of environmental policy, particularly engineering issues.

A small but emerging body of work has meanwhile attempted to unpack environmentally-oriented formalization-style reforms from an epistemologically-richer perspective, showing how specific representations of ASM activity are used to rationalize particular lines of intervention. Work in this tradition has however rarely engaged in site-based ethnographic work in order to understand better how policy rationalities get put into practice and interact with local contexts. Indeed, this is a flaw that it shares with much theoretical work on ASM reform, which – because it focuses on the process of introducing formal institutions and regulations into 'unregulated' mining spaces – is often limited to incipient or speculative analysis about how comprehensive formal institutional frameworks will play out in practice.

In seeking to build on existing theoretical and empirical insights – whilst also correcting where it is adjudged that they fall short – this thesis aims to engage with and synthesize a diversity of academic and policy concerns that relate to Guyana's current environmentally-oriented mining reform experiences. This will mean not only engaging with debates on how interventions may ultimately be more effective in managing the mining-environment relationship, but also examining how they may be more inclusive and appropriate. Guyana's more mature and formalized ASM sector offers a valuable opportunity to examine not only how specifically *environmentally-oriented* formalization

policies play out in practice, but how the various warnings of the critiques actually bear out in reality.

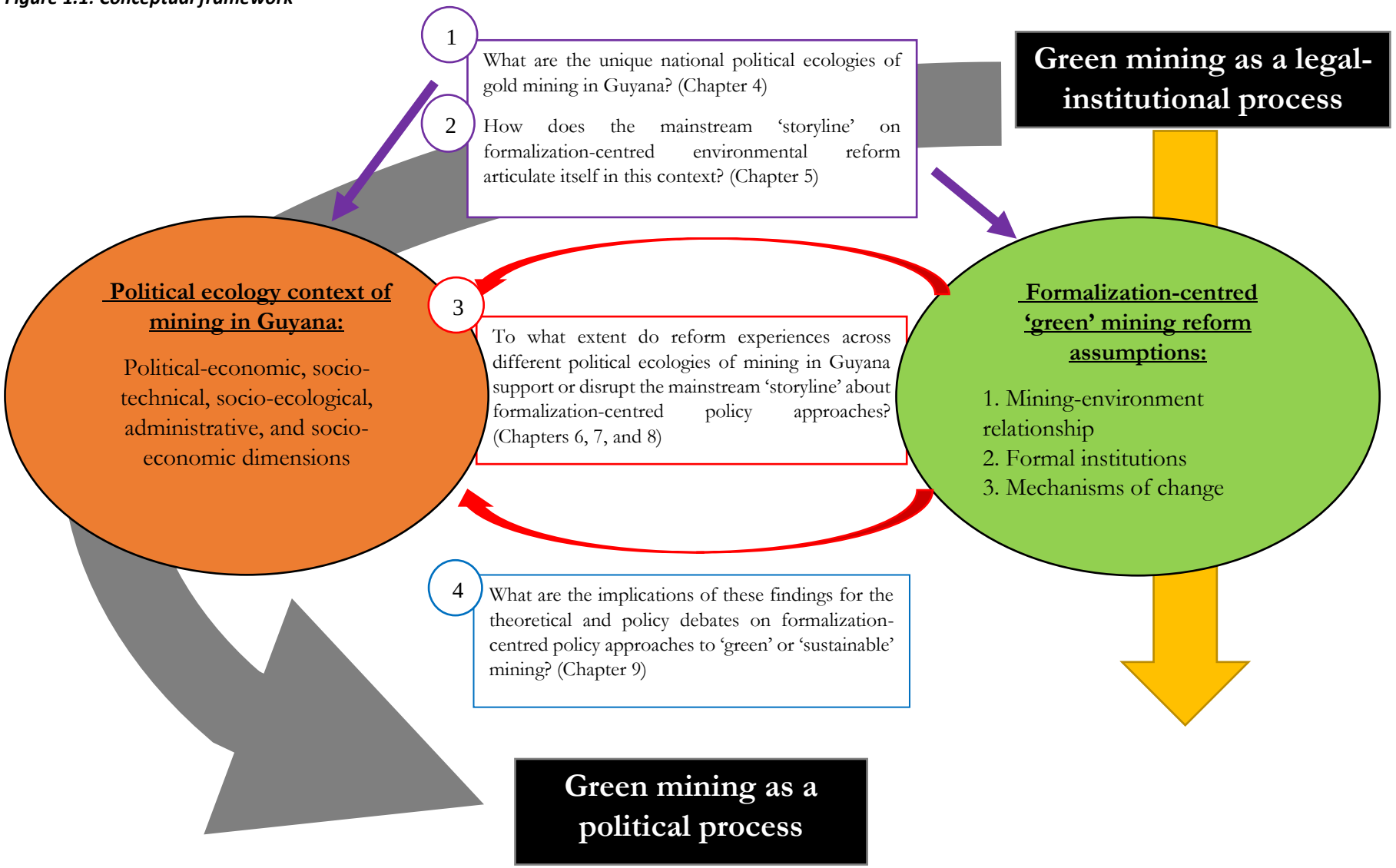
1.3. Research approach, conceptual framework, and research questions

In order to execute this theoretically-driven, empirically-rich, academic-policy engagement, this thesis will adopt a broad political ecology-inspired stance that enables a view of the policy agenda as not only comprising material activities and actions, but as also embodying a stylized way of thinking about both the policy problem and its possible solutions. In this way, formalization can be seen as much about dominant forms of knowledge as about institutions and practices.

According to this stance – and inspired by Hajer (1995) – ASM reform agendas can be seen as 'storylines' that entail three interrelated assumptions. One, about the nature of the 'problems' of ASM. Two, about the kinds of institutional structures that 'responsible' mining should be predicated on – private mineral property rights and a supporting regulatory and technological framework. And three, about the mechanisms through which these institutions will guide miners' activities towards a more 'sustainable' or 'green' ideal.

Overall, the thesis will seek to examine how the unique political ecologies of small-scale mining in Guyana diverge from the idealizations in the storyline outlined above, thus shedding light on some of the reasons why policies do and don't work, and why they may have detrimental impacts on certain actors. In order to do this, the thesis will simultaneously examine the specific assumptions and activities constituting the mainstream approach while also conducting a finely-grained ethnographic study of mining realities as experienced on the ground across specific sites. It will be structured around four main sub-questions that link to an over-arching question and the conceptual framework in Figure 1.1

Figure 1.1: Conceptual framework



Source: Author

In seeking to understand what can be learned from employing a political ecology approach to the examination of ASM reform in Guyana, an over-arching question emerges:

In what ways does a political ecology lens challenge mainstream storylines (and associated policy directions) about ASM reform in Guyana?

To address this over-arching question, four sub-question will guide this thesis. These questions will be addressed sequentially, and will be approached as follows:

Question 1: What are the unique national political ecologies of gold mining in Guyana?

Firstly, the national political ecology of mining in Guyana will be examined in Chapter 4. As well as 'setting the scene' for the subsequent more in-depth case study analysis by providing some national and historical context, this chapter will also serve to highlight the interplay between political, economic, social, technical, and environmental dimensions that has shaped the unique mining context in Guyana (represented in the orange circle in Figure 1.1). In emphasizing the ways in which Guyana's mining sector diverges from the type of mining typically discussed in the ASM literature, it serves to fulfil political ecology's demand to understand the particularities of place.

Question 2: How does the mainstream 'storyline' on formalization-centred environmental reform articulate itself in this context?

Secondly, in examining the local, Guyanese articulation of the mainstream reform discourse, Chapter 5 will identify the different elements – actors, interests, and narratives – that have shaped the reform approach across what are identified as the four phases of reform. It will summarize the Guyanese articulation of the storyline, as represented by the green circle in Figure 1.1.

Question 3: To what extent do reform experiences across different political ecologies of mining in Guyana support or disrupt the mainstream 'storyline' about formalization-centred policy approaches?

Across three case studies representing the main institutional contexts under which land is mined in Guyana, the actually-existing political ecologies of mining in each case will be contrasted with the abstract rendering of these realities within the mainstream reform storyline (Chapters 6, 7, and 8). The case studies will aim to offer insights into the Guyanese articulations of the national political-ecological phenomena (relating to the dimensions that were discussed in Chapter 4 – the orange circle in Figure 1.1) that are misread, over-simplified, or overlooked within the components of the storyline explored in Chapter 5 (the green circle in Figure 1.1). As well as examining the under-appreciated dimensions mediating the effectiveness the approach in addressing the *locally-relevant* priorities of the mining-environment relationship, the focus will also be on how different actors at the local levels experience and feel the effects (or non-effects) of the reforms, and how well (or not) the approach responds to what they feel are their core grievances.

Question 4: What are the implications of these findings for the theoretical and policy debates on formalization-centred policy approaches to 'green' or 'sustainable' mining?

Finally, the analysis will consolidate and synthesize observations of the political ecology phenomena (the orange circle in Figure 1.1) that were misread, oversimplified, and omitted across the study sites by the mainstream storyline (the green circle in Figure 1.1), and will suggest the implications of these findings for theoretical debates on formalization-centred approaches to mining reform (Chapter 9). Overall, as can be seen from the conceptual framework in Figure 1.1, the thesis argues that by taking into consideration these political ecology dimensions, the conception of 'green mining' is transformed from a 'legal-institutional' process (top right-hand box) to a 'political process' (bottom middle box).

1.4. Thesis structure

Following this introduction, which has contextualized the topic within contemporary academic and policy debates and outlined the approach and structure of the thesis, Chapter 2 will provide the thesis's theoretical framework. After situating the topic within a political ecology framework, and then introducing the theoretical groundings of ASM formalization, it will outline three specific but overlapping critiques in the literature – termed 'pragmatic', 'structural', and 'post-structural' – that frame the epistemological boundaries of the thesis. The chapter will conclude by showing how a political ecology

approach to the analysis of ASM reform can build on insights and tools from within these bodies of work to pursue a more textured form of analysis. Chapter 3 will then lay out the methodological approach that follows on from the theoretical framework and will outline relevant methodological and ethical issues.

Five empirical chapters – 4 to 8 – will then follow. Chapter 4 will entail a national-level analysis of Guyana's political ecology of gold mining that will examine the factors that have shaped its socio-technical, socio-ecological, administrative, and socio-economic dimensions. Chapter 5 will involve an analysis of environmental reform discourses, outlining the main approaches to mining reform that have emerged in response to the growth of the mining sector and its perceived environmental impacts, and the actors and interests who have promoted – and who are contesting – them. It will interpret the approach in Guyana in terms of the mainstream 'storyline' on reform introduced in Chapter 2.

Across Chapters 6, 7, and 8, three placed-based case studies will problematize the formalization-centred 'green mining' discourse in Guyana by illustrating the contrasts between the mainstream storyline's rendering of reality and the actual political ecologies of mining that are experienced on the ground. Throughout, it will explore the critical dimensions within Guyana's political ecology of mining that the mainstream rendering over-simplifies or overlooks altogether, and the implications for local people.

In Chapter 6, a place-based case study of mining on 'State' lands in the Potaro Mining District will examine how debates and conflicts around land access and tenure security are overshadowing – and interacting with – the state's attempt to green the sector. It will examine the limitations of the state's syndicate approach in 'solving' many of the challenges that smaller miners face in the context of declining and deepening deposits and minimal state support – as well as investigating how wider governance challenges, especially corruption, are undermining the anticipated functioning of formal institutions intended to secure the state's outcome.

In Chapter 7, a place-based study in the titled village of Maicobie will examine the complex low-intensity conflict that has arisen on titled indigenous land as a result of both the reality of overlapping legal and tenure institutions, and the economic and cultural

pressure from inside and outside the village for it to pursue a mining development pathway. It will explore how these factors are interacting with both the state's green mining agenda and the ability of the village to define and control its own mining-development pathway.

In Chapter 8, a place-based case study in an untitled Amerindian village of Kangaruma-Tasserene will examine the ways in which insecurity and uncertainty of tenure is interacting with both the state's green mining agenda in this region and the ability of a village to define its own mining-free development pathway.

Chapter 9 will synthesize the empirical material to contrast the mainstream storyline and the reality on the ground in order to assess the extent to which observed experiences appear to support – or disrupt – this storyline. It will then highlight how the findings variously support or challenge the theoretical arguments that were explored in Chapter 2. It will conclude that reforms need to be sensitive to, and embedded in, local ecological and political-economic realities. The conclusion, Chapter 10, will summarize the thesis and outline its contributions.

Chapter 2: Theoretical framework

2.1. Introduction

This thesis is concerned with trying to understand current attempts to transform Guyana's established small-scale gold mining sector towards a 'green' ideal. As well as more policy-minded concerns for the functionality of the interventions, it is also concerned with how reforms are affecting poorer land users and how appropriately the mining-environment relationship is being managed. Human geography in general and political ecology in particular are well-placed disciplines for theorizing and documenting human-environment interactions inherent to mining. They are also well-placed to examine the interactions between the discursive and material dimensions of a policy intervention.

After introducing political ecology as a theoretical stance, the core of this review will appraise a range of overlapping critiques of ASM reform that reflect varying epistemological perspectives, termed here as 'pragmatic', 'structural', and 'post-structural'. It will argue that a political ecology approach to the analysis small-scale gold mining reform enables a multi-perspectival focus on a range of dimensions that the single critiques alone may not capture, and that it offers a sophisticated view of the ways in which elements from each body of work intersect and interact with each other. It will explain that the thesis will therefore work towards the operationalization of a political ecology framework in its examination of Guyana's experiences of 'green' mining reform.

2.2. A political ecology framework

2.2.1. Nature-society interactions

This thesis is situated theoretically within the inter-disciplinary field of political ecology. A nebulous term encompassing work that cross-cuts human geography, political science, rural sociology, environmental studies, and anthropology – and which integrates theoretical perspectives from political economy, post-structuralism, actor-centred approaches, and socio-technical studies – political ecology is underpinned by the idea that "social and environmental conditions are deeply and inextricably linked" (Adams & Hutton 2007, p. 149).

Political ecology's epistemological roots are diverse, located in early writings "that focused on unequal power relations, conflict and cultural 'modernization' under a global capitalist political economy as key forces in reshaping and destabilizing human interactions with the physical environment" (Walker 2005, p. 74). As well as a moral concern for the differentiated impacts that economic, social, political and environmental processes can have on various groups, political ecology is also concerned with drawing attention to differentiated responsibilities within these processes (Bryant & Bailey 1997). Typically, it emphasizes the disproportionate responsibility borne by powerful nations and actors, and the corresponding impact felt by poorer actors who often lack the necessary resources or access to political power to contest processes and achieve justice (Peet et al. 2010).

Distinct from – and in response to – the traditional 'structuralist' view of the biophysical environment that tended to cast it as "simply a stage or arena in which struggles over resource access and control take place", political ecology takes a deeper appreciation of socio-ecological relationships (Zimmerer & Bassett 2003, p. 3). It thus focuses not only on how the particularities of natural resources and the environment (such as the location or nature of an oil or gold deposit) can shape social, economic, political, and institutional dynamics in particular places, for particular people, at particular times; but also on how resources, ecosystems, and communities are themselves shaped and affected by social, political, economic, or institutional dimensions (Bridge 2004; Bakker & Bridge 2006; Heynen et al. 2007).

Contrary to more positivistic analyses of human-society interactions that are underpinned by techno-developmentalist narratives about resource efficiency and governance, political ecologists recognize the complex histories that are woven into nature-society relationships (Scoones 1999; Whitehead et al. 2007; Peluso 2012; Libassi & Peluso 2016). This means seeing natural resources not merely as objects that are mapped, claimed, and administered for human exploitation, but as part of a dynamic and contested terrain that embodies a range of uses, normative understandings, meanings, and experiences (Rocheleau 1995; Bridge 2007; Peluso 2012). The existence – and persistence – of these counter-narratives suggests that the way humans interact with land and resources is inevitably contentious and inherently political (Bebbington 2012).

2.2.2. A discursive turn

More recent political ecology approaches, influenced by post-structuralist thought, prioritize the analysis of how attitudes to the human-environment relationship are shaped by dominant forms of knowledge (Forsyth 2004). This work takes an avowedly normative view of knowledge construction, seeing it as dependent on the ontological, epistemological, and political perspectives of particular situated actors (Robbins 2000). From this perspective, knowledge has a relativistic rather than a universal quality, and different traditions and cultures can construct the same issue in multiple ways, leading to the generation of competing stories and narratives (Keeley & Scoones 2003).

This discursive turn in political ecology also brought with it an interest in challenging dominant development pathways and in promoting marginalized non-scientific or hybrid ontologies that may in fact be more contextually-appropriate and socially-inclusive (Forsyth 2004). Many political ecologists warn against an over-dependence on economistic development pathways, and recognize the need to give equal legitimacy to alternative ontological perspectives, especially those from indigenous or subaltern traditions (Escobar 2010).

Increasingly, post-structural political ecology has emphasized a non-hierarchical perspective that interprets the world as a horizontal network in which "biophysical entities, technical devices, statements of causality, and humans" are all woven together in a horizontal network of interactions (Forsyth 2004, p. 100). From this perspective, "science is not seen as a rational and epistemologically unbiased process free from social influence" that looms above all, but as an integral part of the network in which it is located (ibid. p. 100).

2.2.3. Environmental policy

As this thesis is concerned with the interactions between environmental policy interventions and political ecologies of mining, it is important to outline how political ecology approaches environmental policy.

2.2.3.1. Environmental knowledge as discourse

Based on the aforementioned understanding of the politics of nature and knowledge, political ecologists recognize the tendency for dominant forms of knowledge to take on the aura of authoritative truth by theorizing knowledge as 'discourse' (Adger et al. 2001).

'Discourses' have been defined by Dryzek (2013, p. 9) as "shared ways of apprehending the world". Embedded in language and texts, discourses "enable those who subscribe to them to interpret bits of information and put them together into coherent stories or accounts. Discourses construct meanings and relationships, helping to define common sense and legitimate knowledge" (ibid. p. 9).

Although presenting itself as "a gentle and insidiously universal force" (Foucault 1984, p. 114), for Foucault (2011, p. 321), a discourse is in fact responsible for sustaining power relations in society by perpetuating a particular "regime of truth". The endorsement of one dominant representation of reality necessarily marginalizes, undermines, or disqualifies alternative epistemological positions or methodological approaches – ultimately limiting understanding and experience of social reality (Hook 2001). Or, as Adams (2009, p. 208) succinctly puts it, "in the politics of ideas about nature and society, some sets of ideas are more powerful than others."

An elegant way of thinking about environmental policy discourses is Hajer's (1995) concept of a 'storyline', which he defines as a simple narrative through which elements from many different discursive spheres are combined to provide actors with symbolic references that imply a common understanding. The widespread adoption of storylines results in the formation of 'discourse coalitions', which are groups of actors who are drawn to a particular storyline's ordering of reality. Such insights and tools will be crucial when examining and appraising the dominant representations of social and ecological phenomena that underwrite mainstream approaches to the management of small-scale mining.

2.2.3.2. Policy as the outcome of a contingent and contested process

Once representations of reality that rationalize policy approaches are seen not as neutral, fixed categories but as reflections of the ideological and political positions of different actors and networks, a more contingent and contested view of the policy process emerges. Keeley and Scoones (2003) employ a hybrid approach derived from a diversity of traditions[3] to emphasise the role of actors/networks, narratives/discourses, and politics/interests in shaping environmental policy processes.

[3] For example, the analysis of the role of actors/networks is inspired by Latour's (2005) Actor-Network Theory and the practice and agency-centred theories of Giddens (1984). The analysis of interests is rooted in more orthodox political

According to this framework, a policy's trajectory and directionality are not guided by the gradual identification and emergence of a 'foundational' policy truth, but by ongoing political struggles over discursive and material interests at transnational, national, and local levels. Further, knowledge is never universal, but is specific to particular historical moments and scales. Such an understanding of policy knowledge invites a critical questioning of who is promoting particular policy approaches, and what their motivations may be. It also enables a view of marginalization and injustice that results from the execution of these 'neutral' and 'technocratic' policy approaches as socially constructed and contingent, rather than unfortunate (but inevitable). It also however offers a view of policy as a continual negotiation among competing interests, all of whom possess agency (Keeley & Scoones 2003).

A range of writers have built on these insights into the construction of dominant forms of knowledge to try and explain the tendency towards the increasingly standardized, 'out-of-the-box' character of global development policy that invariably contrasts with the level of actually-existing diversity in the local contexts (Adger et al. 2001). Understanding the implications of this tendency towards policy standardization will be a major part of this thesis. According to scholars, policy standardization may have both ideological and strategic dimensions (Keeley & Scoones 2003; Lewis & Mosse 2006).

2.3. ASM reform and formalization

Artisanal and small-scale mining (ASM) reforms for gold mining sectors in developing countries have invariably taken the form of 'formalization'-centred agendas aimed at bringing illegal mining activity into the formal sector, while redefining the terms and parameters of legal mining activity. This section will introduce the perceived 'problems' of ASM that provide the rationale for formalization agendas – typically, revenue and internal security challenges, but increasingly social and environmental factors. It will then identify formalization's main policy components – private mineral rights and regulatory and technological policies – and discuss current global formalization efforts.

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economy approaches (as in (Bernstein 2010) while the analysis of discourses draws from contemporary work in both the Habermassian (as in Dryzek (2013)) and Foucauldian (as in Hajer (1995)) traditions.

2.3.1. Rationales and storylines

ASM activity has received increasing academic and policy attention in the past ten years as a result of the growing recognition of its socio-economic role. The sector is estimated to employ around 13 million people worldwide, and support the livelihoods of a further 100 million (Banchirigah 2006). While extraction in developing countries is generally associated with underdevelopment and the 'resource curse', the specific popular image of ASM is that of an anarchic and chaotic activity that is responsible for conflict, social deprivation, and environmental degradation (Dondeyne et al. 2009; Huggins 2016).

At the organizational level, a link is typically made between the illegality of the activity (with 90% of small-scale miners believed to be working 'illegally') and its impacts, which include lost government revenue, negative relationships with other illicit sectors, and poor labour and environmental standards that escape state regulation (Geenen 2012). At the level of scale, the small-scale sector is frequently compared unfavourably with the large-scale sector, whose greater capitalization is thought to facilitate the wider adoption of non-polluting recovery technologies, and whose more spatially-fixed nature is thought to make is easier for weaker states to regulate and extract rent from (Hilson et al. 2017).

The dominant rationalization for formalization is underwritten by a so-called 'legalist' epistemology that argues that "most social and environmental problems associated with the sector stem from the fact that ASM is predominantly unregulated and operates outside the legal sphere" (Maconachie & Hilson 2011, p. 293). According to this logic, which invokes de Soto's (2000) theories on informality and development and environmental and institutional economic theories, the lack of formal structures denies the miner the requisite tenure security to be able to invest in their business or access credit. For the regulator, it makes monitoring more difficult, denies the state a source of tax revenue, and can be a source of conflict. Although improved environmental practice in small-scale mining has sometimes been seen as more of an ancillary benefit of greater formalization, it has risen to prominence as a primary motivation for reform in recent years (Masson et al. 2013). The text of the Minamata clause[4], for example, implies that formalization will be synonymous with better environmental management of mercury (Spiegel et al. 2015).

[4] See http://mercuryconvention.org/Portals/11/documents/Booklets/COP1%20version/Minamata-Convention-booklet-eng-full.pdf

Overall, the dominant approach to reform could therefore be characterized, using Hajer's (1995) concept, as a 'storyline' entailing three logic components. Firstly, that illegal small-scale miners are the root of the 'problems' of ASM. Secondly, that 'responsible' mining should be predicated on private mineral property rights and a supporting regulatory and technological framework. And thirdly, that these institutions will guide miners' activities towards a more 'sustainable' or 'green' ideal.

2.3.2. ASM formalization policy form and components

Although there are variations between jurisdictions, ASM formalization agendas today appear to be broadly based on two sets of institutional structures: private mineral property rights and supporting regulatory frameworks.

2.3.2.1. Private mineral rights

Within formalization discourse, clearly-defined and stable private mineral property rights are the bedrock upon which the newly conceived mining sector must be governed. As an ILO (1999, p. 4) report argued, "the simple awarding of titles and licences and making them transferable, renewable and long-lasting is the bedrock of viable legal small-scale mining activity." For the miner, demarcation is considered inherent to making extraction a profitable activity through the provision of an inalienable property right (Siegel & Veiga 2009). It is also believed to enable access to credit and other forms of market-based assistance. From an environmental perspective, rights are also thought to encourage investment and more 'sustainable' use of the resource (Hinton 2005).

From a regulatory point of view, tenure clarification and security is considered to help the state to minimize conflict between land users, which is often caused by overlapping interests (Hilson 2002). It should also enable the state to maximize its revenues by eliminating illegal and untaxed activity that is taking place outside the formal framework (Huggins et al. 2017). From an environmental perspective, property rights are thought to ensure that responsibility for any abuses of regulations is assigned to the perpetrator, rather than being socialized – thus protecting those who are outside the discreet, privatized mining spaces from the activity going on within (Vatn & Bromley 1997).

2.3.2.2. Beyond tenure – supporting regulatory and technological policies

Further to organizing mining activity into private titles, formalization advocates recognize the need for accompanying formal rules, regulations, and monitoring to guide

and guarantee good practices (Siwale & Siwale 2017). Although de Soto himself is vague on the nature of these regulations, Posner (2014) argues that in general the state should always aim to draft substantively efficient rules that internalize externalities. With specific respect to ASM, Clausen et al. (2011, p. 19) argue that only where miners are held responsible for damage done do they "have incentives to develop their claims in an environmentally, socially, and economically sustainable manner." A substantively efficient ASM law would therefore have to include "a clear set of duties that miners have to obey, such as controlling the use of toxic chemicals used to process the minerals and rules governing the use of explosives" (ibid. p. 19).

Rules and regulations may then involve bureaucratic requirements for obtaining mine licences and mining permissions and specific technical requirements for mine management (such as correct mercury usage and the acquisition of Environmental and Social Impact Assessments (ESIAs) etc.) (Spiegel 2017). As non-compliance is considered the greatest challenge in governing ASM, theorists believe that the threat of onerous punishment can deter transgressions, and enforcement can be aided by comprehensive state monitoring (Spiegel 2012b). As meeting these new standards essentially requires "turning an ASM operation into a sustainable and profitable industrial extractive unit" (Seccatore et al. 2014, p. 804), some writers acknowledge the need to support miners in acquiring whatever technological capacity is required to meet new formalization requirements (Siwale & Siwale 2017). Siegel and Veiga (2009, p. 51), for example, argue that, as well as working within a formalized tenure framework, smaller miners should be 'capitalized' "in ways that permit them to move from transient artisanal mining so that they can move to more sustainable small- and medium-scale mining."

2.3.3. A brief history of ASM formalization

Initial reform approaches to dealing with the perceived challenges of ASM that became increasingly identified throughout the 1990s did not initially favour what is understood today as 'formalization'. Indeed, previous approaches favoured either trying to attract large-scale firms that would generate employment or trying to get people out of the sector altogether through 'alternative' livelihood approaches (Banchirigah 2008). However, following the world gold price increase in 2008, and with growing attention on the important socio-economic role the sector was playing (particularly compared with the minimal returns typically accruing from Large-scale Mining (LSM)), attention turned towards 'how to mine better', rather than *whether* to mine (Tschakert 2009; Hirons

2011b). Around this newly accepted reality, the increasingly standardized set of policy levers converged around 'formalization'.

'Formalization' has become so dominant in policy discourse that, for some, it is now seen as the hegemonic way to manage land and resources (Putzel et al. 2015). For Hirons (2011b, p. 348) the popularity of ASM formalization reflects the triumph of the sustainable development narratives of large donors and development agencies that are based on the idea that it is possible to both "maximize economic growth whilst minimizing environmental costs." In the area of ASM, in countries as diverse as Ghana, Cambodia, Indonesia, and Tanzania, property rights-based reforms have been developed and implemented, either constructing new institutional structures from scratch, or reforming existing tenure structures (Spiegel 2012a; Hilson & McQuilken 2014).

As well as the focus on property rights, a range of other schemes have been promoted, many of which are explicitly or implicitly linked to waves of interest in various global environmental narratives and indicators[5]. These interventions have variously focused on: improving miners' access to finance so that they can invest in less polluting recovery technologies (Siwale & Siwale 2017); providing education to miners on 'best practices' (Spiegel 2012a); and organizing miners into groups in order to exploit economies of scale and benefit from niche markets (Childs 2014). States have correspondingly received donor financing to draft new laws and regulations, bolster their regulatory capacity, implement environmental projects such as land reclamation, and accede to international agreements aimed at improving mining sector governance, such as the Extractive Industry Transparency Initiative (EITI), the Kimberley Process, and the Minamata Convention (Dietsche et al. 2013; Bodenheimer, 2014; Collins & Lawson 2014; Herbert & Bolton 2018).

2.4. Critiques of formalization

While the principles and policy choices behind formalization coalesce around a fairly standardized set of beliefs and prescriptions, its critiques are manifold and diverse. In the spirit of a political ecology approach that recognizes and attempts to engage with a range

[5] For example, a focus on forests has been captured by REDD+ and PES initiatives; a focus on mercury usage has been captured by initiatives aimed at fulfilling the Minamata Convention; and a focus on the social conditions of working and assisting small-scale miners to capture a greater share of the value chain have been aimed at satisfying Fair Trade and Kimberley Process requirements.

of epistemological perspectives and normative concerns, this section will discuss three separate (but inevitably overlapping) bodies of theory that address formalization-centred approaches. These are delineated here as 'pragmatic', 'structural', and 'post-structural' critiques.

2.4.1. Pragmatic critiques

At the most mainstream level, 'policy friendly' critiques tend to accept the basic legalistic arguments rationalizing formalization and approve of the installation of formal institutions as a solution. They do however draw attention to factors that inhibit the agenda's expansion and effective functioning. While these factors relate largely to questions of sector visibility, they also relate to wider structural, political, and discursive factors that may undermine both miners' technical ability to participate in responsible mining and the capacity of the institutions themselves to contain and manage ASM activity.

2.4.1.1. Lack of visibility, lack of funds

A number of scholars have argued for greater political and economic support for the ASM sector in order to secure a wide range of socio-economic benefits for small miners (Maconachie & Hilson 2011; Hilson et al. 2017). For such advocates, however, there has been a persistent failure in policy to recognize and support the sector – both in its own right or as part of a diversified off-farm livelihood strategy (Hilson & McQuilken 2014). Donor attention, in particular, has focused far more on mitigating the impacts and maximizing the benefits of large-scale mining projects, through 'local content' and 'governance' initiatives, rather than supporting ASM (Herbert & Bolton 2018).

While the tightening of state and aid budgets in the neoliberal era explains the persistent lack of funds generally, some scholars variously attribute the specific lack of support for ASM to an under-analysis of the sector's livelihood and revenue benefits (Hilson & Maponga 2004; Heemskerk 2005); to the perceived costs of regulating and monitoring ASM activity (Banchirigah 2008); to the sector's negative associations with ecological and social degradation (Hentschel et al. 2002); to the political favouring of LSM (Bryceson et al. 2013); and to a bias in donor policy towards farming (Hilson 2016). While Clausen et al. (2011, p. 18) consider that there has been a relative increase in openness among donors to treating ASM as a potentially profitable economic sector, for them this nevertheless "differs significantly from the attitude of many developing

governments, who have continued to treat it as an "inherently criminal activity that should be suppressed by restrictive laws as far as possible."

2.4.1.2. Poorly-designed policies

Where funds do emerge for ASM, they may support misguided interventions. Hilson and McQuilken (2014) argue that poorly-designed ASM policies, whether insensitive regularization, inappropriate technological interventions, or misled attempts at implementing Fair Trade, can lead to ineffective outcomes. Much of the inappropriateness and ineffectiveness of reform interventions is considered rooted in what Hirons (2011b, p. 351) terms the "assumed homogeneity in ASM communities" – a problem that is fuelled by low levels of public research into mining dynamics and by excessive external influence over domestic policies (especially where donors encourage countries to design mining policies around attracting large-scale investment) (Hilson 2007). Specific examples of policy failure are where policy-makers have ignored miners' cultural and economic preference for mining in the design of 'alternative livelihood' programmes (Hilson 2010); where centralized production units have failed because they have been inconsistent with the dynamic nature and individualistic cultural norms of mining (Heemskerk et al. 2015); where specific technologies, such as mercury retorts, have been rejected by miners as inappropriate or ineffective (Veiga et al. 2014); or where ASM operators have been unable to access the necessary technology or training to improve their practices because they lacked licences or titles (Tschakert & Singha 2007).

Miners' ability to participate in formalized mining has meanwhile often been hampered by expensive technical expectations and requirements that are often modelled on larger-scale operations (Spiegel 2009b). As well as the fact that there has been little historic state, NGO, or private sector support to help miners meet these requirements, smaller miners are often operating within constraining structural conditions defined by factors such as a lack of education, class relationships, and conflict dynamics (Siwale & Siwale 2017). Beyond these social factors, several scholars have furthermore observed that the biophysical and geophysical location of deposits, particularly when their depth is beyond the means of small miners to extract, can hinder poorer actors' ability to extract the minerals (Malpeli & Chirico 2013; Spiegel 2014).

In spite of the promise that property titles would bring access to the credit that could resolve some of these issues, "the overwhelming reality on the ground is that formalized

ASM operators continue to face momentous challenges in accessing credit" (Siwale & Siwale 2017, p. 3). As Siegel and Veiga (2009, p. 54) observe from their study of ASM in Uganda, "the title to a US$50 claim, and some buckets and shovels, are not enough collateral to guarantee a loan." The inability of smaller miners to deal with the burgeoning formalization costs often forces them either to have to leave the sector, or to remain in it while attempting to evade the rules, acts that may have social or environmental consequences (Tschakert & Singha 2007).

2.4.1.3. Regulation

2.4.1.3.1. State capacity and integrity

While miners themselves face a challenging economic and political context in terms of meeting requirements, states also typically struggle to establish and enforce formal institutions, due to financial, technical, and human resource constraints (Spiegel 2012b). As well as representing a logistical challenge, rolling out new titling systems can be met with conflict and resistance from other land users (Hilson & Yakovleva 2007; Geenen 2012). Even once the institutional architecture is in place, state agencies may face further significant challenges in executing their regulatory functions (Heemskerk 2005). As Hirons (2011b, p. 352) observes of Guyana, the geographic remoteness of ASM communities presents a particular bureaucratic challenge: "under-staffed, under-educated and under-funded regions within Guyana mean that any ASM policies will only succeed in a broader context of commitment to the interior." Furthermore, where penalties have been wrongly calibrated in the first place, they may be ineffective in deterring negative practices among miners who will be happy to pay the fine and continue polluting (Spiegel 2017).

Although mainstream analysts acknowledge the limitations of state capacity, they often assume that resolving such issues is purely a question of funding greater surveillance through increased officer numbers (e.g. CI-Guyana (2013) and IADB (2017)). By contrast, there is widespread documentation of complicity and collusion between miners and regulatory actors in the literature, with powerful actors often being allowed to circumvent official processes and evade rules and regulations (Spiegel 2009a; Crawford & Botchwey 2017; Hund et al. 2017; Peluso 2018). Committed enforcement officers must meanwhile work in conditions of extreme vulnerability and isolation where they are regularly threatened by gold mining actors and other criminals; this makes enforcement

a particularly dangerous occupation, and leads many officers to overlook transgressions for their own safety (Heemskerk 2001a). Such problems have long been observed in Guyana by official[6] and unofficial[7] sources.

At the national scale, states themselves may be vulnerable to regulatory capture, leading to favouritism or rent-seeking activities that undermine institutional integrity (Bulkan & Palmer 2016). When it comes to participating in global schemes, particularly in the natural resource sectors, states may manipulate international good-will and trust in order to access funds for their own use, failing to implement the schemes as agreed (Ongolo & Karsenty 2015).

2.4.1.3.2. Dynamic and informal practices

In examining more closely the ways in which mining takes place in practice, a range of scholars have drawn attention to the inherently informal nature of ASM that often overwhelms – or is at odds with – formal rules and state regulatory efforts (Nyame & Blocher 2010; Van Bockstael 2014; Verbrugge 2015a). These informal or discretionary practices may be deeply embedded in historical and political processes and local authority systems, or they may be expressions of more recent political-economic dynamics (Echavarria 2014; Hilson et al. 2017; Côte & Korf 2018). Such dynamics may be particularly common in geographically-isolated and inhospitable environments where the state struggles to retain its monopoly on control and where a culture of mistrust pervades (Van Bockstael 2014; Peluso 2018). Although some scholars believe that policy approaches should try to incorporate discretionary governance structures into formalization policy approaches, others highlight the challenges associated with synergizing multiple tenure systems (Hirons 2014).

2.4.1.4. Institutional capacity and dynamic ecologies

Although given less attention in the dedicated ASM literature, scholars in other areas of natural resource studies have drawn attention to the more profound limitations of linear and static legal institutions such as property rights and human management techniques in controlling and containing certain complex activities. Indeed, as Scoones (1999, p. 490) observes, in scientific and social scientific communities there is a "growing appreciation

[6] See GGMC (2015).
[7] See Roopnarine (2002) and Bulkan and Palmer (2016).

of complexity and uncertainty in social-ecological systems and, with this, the recognition that prediction, management, and control are unlikely, if not impossible." The following dimensions appear to undermine several of the key characteristics of formal institutions that are used to advocate the environmental rationale for formalizing ASM activity.

2.4.1.4.1. Dynamic production practices:

While de Soto's (2000) assumptions are often used to support the idea that private property rights may encourage more sustainable mining through the encouragement of long-term investment, there is some scepticism about the environmental credentials of the title in a small-scale mining context (Siegel & Veiga 2009). The fact that gold extraction is a singular, non-repeatable event means that, in contrast to more 'eco-regulatory' activity such as farming – for which there is an incentive for the landowner to try and ensure multiple years of continuous yields – miners inherently lack the equivalent incentives to look after their properties (Boyd et al. 2001). Furthermore, as the location and quantity of gold is ultimately unpredictable, there appears no realistic method of identifying and extracting resources efficiently, suggesting that preventing degradation in ASM entirely may be impossible (Lanzano 2018).

2.4.1.4.2. Transboundary externalities:

Formal properties also face limitations in controlling the inherently transboundary nature of mining's externalities (Hentschel et al. 2002; Hinton et al. 2003; Miserendino et al. 2013). The dynamic flows inherent to alluvial small-scale gold mining, for example, mean that many of the activity's by-products and externalities – such as tailings and other effluvia – can flow out of the property boundaries into another area (Miller et al. 2003). This may be particularly concerning as, as Spiegel and Veiga (2010, p. 377) observe, because "most small-scale miners have not adopted mercury containment strategies in their operations, mercury released through air, water and soil are common and can have significant downstream effects."

2.4.1.4.3. Time-lag externalities:

While the existence of property rights and regulations in natural resource management are purported to create lines of accountability that, theoretically, should enable a regulator to hold individuals to account, the appearance of externalities months or years after the mining activity has ceased makes it particularly challenging to monitor and govern. As Vatn and Bromley (1997, p. 137) put it: "externalities are basically novelties. They will

mostly be recognized after they have been produced. Both elements relate to the fact that externalities are – to a large extent – the result of interactions between human activities and the integrated physical and biological processes of the environment." Such a reality may render it difficult for Mines Officers to attribute proper responsibility for transgressions.

2.4.2. Structural critiques

The second significant body of formalization critique shifts the focus from the barriers to effective formalization to the implications of reforms for poorer land users. Reflecting the epistemological stance of their authors, these critiques have predominantly sought to draw attention to the 'exclusionary' nature of the formalization process – both in the sense that it naturally tends to exclude smaller miners and that it can undermine other land users' pre-existing land and resource rights. Many of these ASM-specific critiques chime with work in others areas on how emerging 'green' policy directions may be leading to repressive or restrictive outcomes for poorer actors in natural resource sectors (see for example Corson and MacDonald (2012); Fairhead et al. (2012); Brockington and Ponte (2015)).

2.4.2.1. Formal institutions, access, and participation

While the mainstream discourse implies that introducing formal titles is a purely technocratic process, critics argue that installing a formal system can often disadvantage certain groups and individuals, while favouring others (Fisher 2007; Geenen 2012). There are many reasons why certain groups or classes of miners may not be able to access property within a newly-established or recently-reformed formal system. High barriers to entry may exist for smaller miners, with property application fees and technical requirements only within the reach of larger 'medium-scale' miners (Siwale & Siwale 2017). In such cases, pre-existing inequality and exclusion may be effectively reinforced (Geenen 2012).

On the other hand, land access may be contingent on political patronage, discriminating against those who lack these connections (Verbrugge et al. 2015; Hilson et al. 2017). Those holding communal or customary land titles may not be recognized by the state, denying them the right to participate (Huggins et al. 2017). Alternatively, there could simply be a shortage of land, leaving no 'space' left for smaller miners to practice 'responsible' mining. Spiegel (2016), highlights, for example, how conflicting state aims

in Cambodia have led the government to pursue a mining strategy that has seen the majority of the mining lands given out to large-scale foreign prospectors and miners, making it difficult for small miners to access lands. Access to land may also be obstructed by emerging 'green' rationalities. For example, Hirons (2011a) has shown in his study on REDD+ in Ghana how efforts to 'lock in' carbon in line with REDD+ policy objectives are harming miners' access to mining lands, threatening their livelihoods.

Such a lack of ability by smaller miners to access lands through formal processes may paradoxically drive increased illegal activity, with those frozen out resorting to mining outside official zones, further burdening the state (Nyame & Blocher 2010). Where access to training or technology is dependent on being a formal property holder, the pragmatic and structural critiques may intersect, with excluded miners driven to practising irresponsible mining (Siwale & Siwale 2017).

2.4.2.2. Exclusionary nature of regulatory and administrative rules

Even where formal property can be accessed, new formalization and regularization measures may discriminate against poorer land users, particularly those who were already being squeezed by restrictive structural conditions amidst neoliberalism (Putzel et al. 2015). Clausen et al. (2011, p. 18), for example, highlight how "time-consuming licensing procedures, expensive licensing fees and elaborate environmental risk-assessment requirements" hinder miners' participation in existing schemes. While the existence of such procedures tends to exclude smaller miners, it correspondingly favours the more powerful and educated miners who can satisfy complex technical environmental requirements and use their power and influence to navigate the bureaucratic system (Spiegel et al. 2015; Spiegel 2017).

For others, insensitive formalization policies – as with prohibitive barriers to mineral property access – ultimately become responsible for 'creating informality' by driving poorer miners to evade and avoid rules and regulations (Maconachie & Hilson 2011; Van Bockstael 2014; Hilson & Maconachie 2017). Such dynamics once again jeopardize environmental aims (Nyame & Blocher 2010). In Guyana, these latter debates may be particularly relevant: although Hilson and Maconachie (2017) praise Guyana's administrative requirements for being historically accessible for domestic claim holders, Bulkan and Palmer (2016) argue that the recent rise in illegal mining can be directly connected to a recent proliferation in the number and rate of taxes on smaller miners,

suggesting that the 'legalist' explanation of informality may again become relevant in that context.

2.4.2.3. Repression and enforcement

A broad literature has examined the violence and repression that is often employed against miners who are unable to meet new formalization requirements. Spiegel (2009a) documents the conflict that arose in Zimbabwe between the state and smaller miners during the crack-down on 'illegal' activity in a classic example of an insensitive, 'top-down' intervention. Geenen (2012) documents a similar process in the DRC, where resentment was inflamed by the perception that new requirements were part of more sinister state motives than the ones offered. After all, formalization policies are often perceived by smaller miners to be part of a deliberate attempt to phase them out in order to attract large-scale foreign investment or to grab land for other purposes (Hilson et al. 2007). In Guyana, smaller scale miners have regularly accused the government of attempting to squeeze them out of business, significantly contributing to a recent break-down in dialogue between miners and the state (Stabroek News 2017f).

2.4.2.4. Beyond differentiation: class dynamics

While there has been an increasing recognition of the potentially differentiated impacts of formalization policies by socio-technical[8], gender[9], age[10], and race[11] dimensions, there has been a recent burst of class-based analytical approaches to ASM sector and reform issues. Verbrugge (2015a, 2015b) and Verbrugge and Besmanos (2016), for example, examine the importance of social status in determining land access, vulnerabilities for poorer classes of mining labour, and the persistence of informality in the sector in the Philippines. Peluso (2017, 2018) examines the relations between landowners and small-scale plot holders in Indonesia in shaping socio-economic vulnerabilities in that context.

Linking class dynamics with environmental reforms, Spiegel (2009a) captures the ways in which property owners or mine managers in Zimbabwe pass on the costs of environmental compliance to poorer mine labourers, who, in turn, receive lower wages.

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[8] See Seccatore and de Theije (2017).
[9] See Huggins et al. (2017) and Yakovleva (2007).
[10] See Hentschel et al. (2002).
[11] See Tschakert and Singha (2007).

He quotes Siegel (2008, p. 42) in summarizing: "cutting-off miners from mercury can thus be a regressive tax that forces the group at the lowest economic rung to take a pay-cut without necessarily reducing mercury pollution." Because of the relatively organized and formalized nature of ASM in Guyana and the increasing visibility of class dynamics (Bulkan & Palmer 2016), such analytical tools will be important in examining how the various class relationships shape – and are shaped by – reform activities.

2.4.2.5. Institutional bias in formal structures

Beyond processes that exclude poorer miners from participating in their desired livelihood activity, other scholars have focused on the ways in which formalization processes systematically disadvantage *non-miners* (Bebbington 2012). This may be particularly pertinent for marginalized segments of the population, such as indigenous communities, who adhere to customary or non-individualized tenure frameworks that are often not recognized or are considered subordinate to mineral interests (Mitchell 2016). Indeed, as Hilson and Maconachie (2017) have observed, mineral property rights invariably override all other land claims – a norm that has frequently been established by colonial governments and perpetuated by modern states.

The predication of formal mining institutions on such a normative structural basis of tenure may contribute to the ignoring or worsening of pre-existing grievances, practically inhibiting communities' participation in their favoured livelihood activity, or failing to offer communities sufficient protection from the environmental impacts of mining (Hentschel et al. 2002; Verbrugge et al. 2015). In recent years, such claims have been regularly made of Guyana's own legal framework, which, some argue, has historically privileged mining (and other extractive) interests over indigenous land claims (Colchester 1997; Hennessy 2013; Bulkan 2016).

2.4.2.6. Spatiality and conflict

Where pre-existing claims are ignored or overridden, they may exacerbate old conflicts or provoke new ones. Significant work in political ecology has studied the dynamics of such conflicts between large-scale mining companies and indigenous communities and, increasingly, between large-scale companies and small-scale miners (Hilson 2002; Bebbington 2012; Patel et al. 2016). In recent years, modern Geographic Information Systems (GIS) techniques have illuminated the extent of overlapping interests and claims, opening up new perspectives on the layered interactions between institutional formations

and political struggles (Spiegel et al. 2012; Mitchell 2016). While conflict between large and small firms is less of an issue in Guyana, competition between state-sanctioned mineral properties, pre-existing claims on customary lands, and emerging 'green' policy agendas over control of surface and sub-surface resources may nonetheless make these considerations particularly relevant (Lowe 2014; Bulkan & Palmer 2016).

2.4.3. Post-structural critique

A final lens through which ASM formalization is critiqued is from a post-structural-inspired perspective. Here, the focus is on the ways in which dominant forms of knowledge shape ASM policy, often leading to negative outcomes for poorer actors. Such a perspective offers a view of formalization policies as not only a set of practices, but as a set of specific assumptions and representations about social and ecological reality. While this work is connected to the 'structural' scholarship on the material consequences of re-shaped governance, the specific interest in the rationalities underwriting such approaches allies these critiques more with emerging work on 'green governmentalities' (Cavanagh & Benjaminsen 2017).

2.4.3.1. Explicitly post-structuralist ASM reform scholarship

Although Hirons (2011b) notes that specifically 'green' mining reform activities have, as yet, received relatively little empirical or theoretical attention, a growing number of authors have nonetheless contributed to better understandings of the specific ways in which environmentally-focused formalization agendas – as well as more 'general' reform approaches – have attempted to frame ASM activity in order to justify their interventions.

Spiegel (2017, p. 105), for example, engages critically with ways in which environmental "storylines" have been operationalized to justify the roll-out of Environmental Impact Assessment (EIA) processes for the ASM sector. He thus highlights the ways in which the neutrality of science can effectively rationalize the exclusion of smaller scale operators. Elsewhere, Spiegel (2009b, 2015) has engaged with discourses on mercury-free mining to show how similar processes are at work in that domain.

Hirons' (2011a, 2011b, 2015) work on ASM and REDD+-motivated reform agendas is meanwhile of particular relevance to this thesis in contributing to a better understanding of both how specifically *environmentally-oriented* mining reform agendas become operationalized, and how they potentially attempt to re-shape mining governance. Hirons, one of very few to have looked specifically at ASM dynamics in contexts where REDD+

is being piloted[12], has highlighted how the mainstream GEM approach to ASM reform is underwritten by a 'criminalization' discourse that rationalizes the crowding out of miners from the forest landscape.

While not examining specifically environmental reform discourses, Childs (2008, 2014a, 2014b) nonetheless engages with contemporary narratives on Fair Trade in sub-Saharan Africa to explore how the schemes are rationalized by particular representations of ASM operators. The work also engages with discursive contestation around the take-up of the certification schemes, highlighting challenges that lie beyond the technical dimension, such as the political and ideological exclusion of many smaller operators from the schemes.

2.4.3.2. Disrupting narratives on impact and responsibility

While the above authors have adopted an explicitly post-structural stance to engage with ASM reform, a number of scholars have taken implicitly post-structural positions to disrupt the "simplification and standardisation" of the mainstream discourses on reform (Hirons 2011b, p. 354).

2.4.3.2.1. Is ASM really that bad?

While populist anti-mining discourses stress the strength of the link between ASM mining and the environment, others have argued that the focus on ASM is disproportionate (Hilson & Gatsinzi 2014; Theije et al. 2018). Some have pointed out, for example, that small-scale mining has a much smaller deforestation footprint than other forms of land use, such as industrial agriculture, due to the fact that it is bound to available deposits and existing infrastructure (Hirons 2011b). Others have stressed the uncertainty around the nature of ASM's impacts on the environment, highlighting that sites do not respond predictably or linearly to the socio-ecological experience of mining. Peterson and Heemskerk (2001) show in their research on ASM in Suriname, for example, that sites can experience re-growth in vegetation after mining activity has ceased. Hirons et al. (2014) show that, in spite of short-term impacts, forest-based legacies in previously-mined areas show some potential, especially where pro-active land restoration projects are implemented.

[12] For work in a more positivistic tradition, see the work of Laing (2014) and Hund et al. (2017).

2.4.3.2.2. Large vs small?

Against the common narrative that rationalizes the targeting of small-scale miners by arguing the large-scale sector is better placed to exploit technology and abler to comply with regulations and standards (e.g. Hinton et al. 2003), a range of work highlights the detrimental social and environmental effects of large-scale mining (Bridge 2004; Hilson & Haselip 2004). Others have stressed that ASM technology, such as panning, is a lot less destructive than deep mining; and that, furthermore, the ecological footprint depends on a range of factors, such as the depth of minerals, the availability of prospecting information, or the attitude and socio-economic situation of the miner (Seccatore & de Theije 2017).

2.4.3.2.3. Organized vs unorganized?

While there is an oft-repeated notion that legal mining is synonymous with 'responsible' mining, and vice versa, a range of authors have sought to destabilize this narrative by showing how illegal mining can often take place under highly-structured rules and practices that efficiently regulate its activity (Hilson & McQuilken 2014). Such findings suggest that one of the key rationalizations for reform – of needing to impose order over anarchic small producers – may be called into question (Tschakert & Singha 2007).

2.4.3.2.4. Innocent indigenous?

The tendency to demonize ASM operators is often accompanied by a corresponding portrayal of indigenous communities as the 'victims' of mining who are adversely affected by prostitution, pollution, intra-community conflict, and the erosion of community life (e.g. Colchester 1997; Bulkan 1998). Such a depiction is often used to rationalize interventions aimed at curtailing mining activity that is harming such communities. However, as Lahiri-Dutt (2017) argues, this binary view ignores the fact that many indigenous communities willingly engage in mining to satisfy their market-dependence and material aspirations. In this regard, some scholars sympathetic to the fate of indigenous communities have conceded that there is generally a need to understand better the dynamics of indigenous participation in mining (e.g. Hennessy 2015).

2.4.3.3. Challenging the legitimacy of formal institutions

While the structural critiques of formal property rights focus on the potentially exclusionary nature of the system's installation, others have sought to problematize the legitimacy of the institutions themselves. Indeed, as Schlager and Ostrom (1992, p. 250) have stressed, "to be effective they [property rights] must be accepted as legitimate by resource users." For Clausen et al. (2011), this means that both the *form* and *distribution* of ASM property titles and institutions must be accepted. If reform interventions are predicated on a disputed basis of tenure it could become a source of resentment and conflict that undermines confidence in the formal structures. And as Hirons (2011b, p. 352) observes, "the ideological dissonance behind much infrapolitics concerns systems of property rights... with egalitarian and communitarian societies struggling to adopt and accept the seeming inhibitions of private property."

2.4.3.3.1. Form

In terms of debates over form, Howitt and Suchet-Pearson (2006, p. 323) argue that formal structures such as individualized property regimes embody a "hidden cultural specificity" that necessarily discriminates against customary, non-individualized management approaches. Ferguson (2007, p. 72) has, after all, characterized regularization processes that attempt to organize human activity into "ordered, gridlike spaces" as reflecting the modernist underpinnings of the colonial project. As well as crowding out people, physically, the overriding of culturally-specific tenure systems may also undermine alternative – particularly non-economistic – meanings and experiences of land (Peluso 1995; Tsing 2003).

In spite of his associations with neoliberal thought, even de Soto himself believed that formalization should always attempt to recognize and incorporate pre-existing tenure systems into its governance framework: as Clausen et al. (2011, p. 18) observe, "instead of creating formal property rights by top-down legislation, he [de Soto] argues that existing customs and possessory relationships that have already been established and work efficiently should be formalized." Scholars have nonetheless acknowledged the frequent conflicts and tensions that arise from within 'hybrid' or 'plural' tenure systems, where some rights (invariably private individualized mineral right) inevitably carry more weight than others (Hilson & Maconachie 2017; Huggins et al. 2017). Others warn

against inadvertently entrenching forms of elite dominance in attempting to recognize and formalize pre-existing forms of authority (Hirons 2014).

2.4.3.3.2. Distribution

In terms of debates over property distribution – whether through the state or the market – several scholars have drawn attention to the conflicts that can arise where land distribution is perceived to be unfair or illegitimate. Verbrugge (2015b) has shown how political tensions in the Philippines have been exacerbated by perceptions that the state has distributed land to its allies and associates. Although many policy actors like to see the market as a neutral and legitimate arbiter and distributor of properties, Clausen et al. (2011) warn that such laxity may contribute to inequality and the concentration of property ownership. They therefore argue that, from a practical point of view, minimizing conflict stemming from perceptions of unfairness or favouritism may depend on ensuring that "no entity should 'own' more mineral rights than it can develop" (ibid. p. 22).

2.4.3.4. Challenging sustainable development

Finally, while much post-structuralist inspired work on ASM is generally committed to working towards more just and legitimate versions of formalization, a final body of critique challenges the idea that a 'sustainable' outcome is even possible as long as any form of extraction is taking place (Pepper 1996). Such an extreme 'ecocentric' position sees extraction as impossible to justify and manage, and expresses scepticism about the idea of – and belief in – the possibility of reconciling, within territories, development and environment aims through 'technocentric' ecological modernization approaches (ibid.).

For such critics, the overall economistic and modernizing ontology of an agenda that could be considered 'successful' in spite of failing to both prevent significant ecological degradation or protect its citizens from the impacts of mining activity is highly questionable (e.g. Colchester 1994, 1997; Butt Colson 2013). While not necessarily offering a practical policy approach to 'greening' mining, such ontologies will nonetheless be important in understanding the discourses employed by indigenous organizations and conservationists within this thesis.

2.5. Towards a political ecology of ASM reform

Given the evidently rich array of theoretical and empirical work on ASM and ASM reform, how does a political ecology perspective, outlined in Section 2.2, improve on

these individual critiques? This question gets to the heart of current debates in the ASM literature, which have increasingly questioned the value and application of more critical academic research to the sector and its millions of participants. Hilson and Maconachie (2017), for example, criticize what they see as a lack of dialogue between what they characterize as the 'policy' and 'academic' debates, with critical academics – for them – out of touch with policy makers' concerns. These contentions seem to speak to Dempsey and Robertson's (2012, p. 759) adumbration of the 'internal' policy debates – that are ultimately seeking to improve policies on "empirical grounds" – and the 'external' debates that are trying to "investigate underlying assumptions and epistemological framings" of the policy agenda.

The argument in this thesis however is that these distinctions may be false dichotomies that overlook how more critical perspectives inherent to political ecology (that focus on dimensions such as the politics of knowledge construction, the differentiated social impacts of policy, and the subtle socio-ecological materialities of economic activity, for example) can inform, challenge, and transform policy in new ways. Indeed, a range of work in the political ecology tradition has applied this hybrid methodological approach to the analysis of other environmental policy narratives and policy approaches, offering rich empirical evidence that challenges both dominant and populist discourses, and that highlights more inclusive and effective policy approaches. In this regard, Peluso's (1992) work on forest politics and policies in Indonesia and Fairhead and Leach's (1995) work on environmental change and policy interventions in West Africa are exemplary works.

According to Robbins (2011, p. 20), political ecology practised in this way is driven by the "normative understanding that there are very likely better, less coercive, less exploitative, and more sustainable ways of doing things." In this sense, it is aligned with Foucault's definition of 'critique', which as Cavanagh and Benjaminsen (2017, p. 103), citing Hardt (2011, p. 19), note, is not necessarily limited only to practices of "fault finding", questioning of authority, or efforts to expose the operations of power; but also "suggests the possibility of a more substantive form of critical theory, one that aims not simply at analysis and conceptualization, but 'at constructing a new life and creating or at least prefiguring a new world.'"

Political ecology perspectives that synthesize the broad range of theoretical approaches and methodological tools laid out in Section 2.2 have however not yet been brought to bear in the study of ASM policy reform agendas. While research has examined particular

dimensions of gold mining that touch on the concerns of political ecology, such as the justice implications of large-scale investment or the impact of formalization policies on local communities (e.g. Bebbington (2012) and Spiegel (2009a)), such work has tended to focus on the social dimensions of mining investment or policy directives, and has under-analysed both the more technical aspects of mining and the more intimate interactions between political and ecological phenomena in shaping policy success and social marginalization (c.f. Malpeli and Chirico (2013); Lanzano (2018)). Furthermore, while critiquing the insensitivity and justice implications of policy approaches, such work has not engaged in an explicit unpacking of the epistemologies of specifically *environmentally-oriented* ASM reform agendas, potentially leaving observers without a clear understanding of why specific policy framings are leading to negative or ineffective outcomes (e.g. Hilson and McQuilken (2014)). Work that *has* engaged explicitly with post-structural political ecology to unpack environmentally-informed ASM discourses has, meanwhile, generally not engaged in detailed empirical, site-based studies that examine how the micro-practices and micro-politics of mining are being re-shaped by policy agendas, thus obscuring a better understanding of how policy discourses play out – and are resisted – on the ground (e.g. Hirons 2011b).

The lack of work that simultaneously analyses the specific framings of environmentally-oriented ASM reforms, the ground-level experiences of the sector's participants, and the intimate interactions between social and ecological dimensions – combining discourse analysis and ethnographic research methods while also engaging with quantitative and spatial data – arguably leaves a gap in the literature that this thesis on ASM reform in Guyana aims to address. In designing an approach for examining these interactions, Hajer's (1995) concept of a 'storyline' may be helpful as an analytical device that can enable a view of formalization policies as not merely a set of practices and institutions, but as also embodying specific assumptions and representations about social and ecological reality.

Recapitulating the three components of the storyline introduced in Section 2.3.1 and allying them with the theoretical critiques of ASM reform in Section 2.4 produces Table 2.1. The first component identifies the nature of the 'problems' of the mining-environment relationship inherent to ASM, and the corresponding critiques draw attention to the complexity that surrounds the true nature of this relationship. The second component focuses on the recommended formal institutions, and the corresponding

critiques highlight the social justice implications of formalization policies. The third component emphasizes the mechanisms through which the formal institutions achieve their aims and the corresponding critiques draw attention to a range of factors that may inhibit policy success. Taken together, these combined theoretical counter-arguments – or hypotheses – encapsulate the political ecology research programme upon which this thesis is predicated.

The 'storyline' thus serves as a device through which to interrogate holistically the range of normative concerns suggested by the aforementioned theoretical critiques of ASM – thus fulfilling political ecology's commitment to understanding how outcomes for poorer actors may be the result of interactions between material and discursive dimensions across scales and temporalities. It may also offer insights into how the different objects of interest of the three different critiques interact with each other. For example, how do patterns of economic and social injustice mediate miners' ability to adhere to rules and regulations – and thus influence the overall environmental aim of interest? Alternatively, how do geographical and spatial dimensions of mining interact with social and political relationships to influence small miners' exclusion from the sector?

Table 2.1: Political ecology framework

Mainstream storyline component	**Mainstream storyline assumption**	**Theoretical critiques**
1. Mining-environment relationship	ASM miners, particularly the illegal ones, are causing negative environmental and social impacts	Mining-environment relationship is more complex and contested than assumed
2. Formal institutions	Formal institutions are the legitimate way of dealing with the problem identified above The state can install these institutions If designed correctly, and if support is provided, institutions won't exclude poorer miners	Formal institutions may not be accepted as legitimate Formal institutions may discriminate against poorer miners Formal institutions may be culturally specific or inappropriate
3. Mechanisms of change	The existence of the formal institutions, overseen by the state, will be effective in guiding miners towards improved mining practices.	A range of social and ecological factors can undermine the functioning of formal institutions

Source: Author

2.6. Conclusion

This chapter has contextualized discussions on ASM formalization within contemporary theoretical debates. It has introduced the general political ecology framework within which this thesis is located, emphasizing political ecology's interest in exploring political-economic and socio-ecological dimensions – as well as the interactions between discursive and material phenomena. It has introduced concepts such as 'discourses' and 'storylines', which, it has argued, can be used to think about how environmental policy knowledge gets constructed and operationalized. It has also discussed how these interventions can have differentiated impacts on various land and resource users, highlighting political ecology's concern for poorer and marginalized actors.

It has reviewed a range of critiques on ASM formalization, separating these into 'pragmatic' critiques concerned with the obstacles to achieving pre-conceived outcomes, 'structural' critiques concerned with the social justice implications of reform, and 'post-structural'-inspired critiques concerned with problematizing dominant forms of knowledge that are used to rationalize interventions. It concluded that these overlapping critiques may be too narrowly-focused on their own particular concerns of interest and may as a result under-analyse dimensions that are of intrinsic interest to other scholars and observers, while also under-analysing factors that may also directly influence their own areas of concern.

In seeking to build on – and bring together – the concerns of ASM reform scholars into a more holistic research programme, the final section proposed a political ecology approach based around Hajer's (1995) concept of the 'storyline', according to which reform agendas are seen as not merely a set of practices and institutions, but as also embodying specific assumptions and representations about social and ecological reality. It was argued that such a perspective enables a simultaneous engagement with a range of theoretical arguments and normative concerns that ultimately offers a broader form of analysis of reforms than the individual critiques are able to capture alone. Such an approach may also practically be able to capture the interactions between different discursive and material dimensions of reform that may ultimately be able to inform more inclusive and effective policy. The next chapter will explain how the political ecology research programme will be put into practice in this thesis.

Chapter 3: Methodological approach

3.1. Introduction

This chapter will outline how the theoretical debates in Chapter 2 informed the research design of this thesis. It will begin by outlining the ontological and epistemological perspective underpinning the thesis. It will then discuss the choice of cases – both Guyana, and the sub-national cases within Guyana – and will then discuss in more detail the methods that were used: narrative and document analysis, quantitative and spatial data collection, semi-structured interviewing, participant observation, and field visits. It will also explain how the data were analysed and synthesized in order to respond to the theoretical framework introduced in the previous chapter. It will conclude by discussing relevant ethical issues and methodological challenges.

3.2. Ontological and epistemological perspective

It was my conscious decision for this thesis to engage with a range of epistemological perspectives on mining and mining reform. This motivation is a reflection of my own academic-policy identity, having worked in a policy context for a number of years and seen the necessity of engaging with policy concerns and languages – particularly those pertaining to dominant development epistemologies – even if one doesn't necessarily agree with them (Hilson & Maconachie 2017).

The desire to move beyond research that is focused purely on policy-makers' priorities and concerns, however, responds to my own desire – encapsulated in Hirons' (2011b, p. 353) call – to move beyond "much of the research into ASM" that has thus far been dominated by work on technical improvements. Indeed, Hirons (2011b, p. 353) calls for both "a broadening of case studies," and "research into the formation and operationalization of policy discourses in the field of ASM, addressing specifically: why the evidence of heterogeneous local contexts and relative economic importance are not recognised in policy."

For more radical environmental scholars, engaging at all with policy-makers' concerns about how to support the continuation of extractive activity – albeit an 'improved' version

of it – may be seen as an ambivalent one given mining's reputation for ecological and social degradation (Castree 2008). However, in the spirit of political ecology, this thesis has avoided taking extreme anti- or pro-mining position but has instead tried to emphasize the value in engaging with a diversity of perspectives on the mining-environment relationship. In this sense, as well as engaging with Amerindian narratives about ecological degradation from mining, for example, I also engaged with the arguments of different classes of miners, as well as those of policy professionals. Thus, while accepting that there *are* undeniable biophysical realities pertaining to mining, the position taken here is that there are nonetheless different ways of seeing and framing these realities – an ontological perspective most closely aligned with critical realism (Forsyth 2004).

Based on these ontological and epistemological commitments, the methodological approach engaged with not only 'interpretive' data (derived from interviewees' perceptions and experiences of events and phenomena), but also with more 'positivist' data (such as official quantitative and spatial data on environmental change and mining expansion). The engagement with the latter forms of data was done in order to both gain a contextual understanding of how macro trends are shaping experiences for a variety of actors, as well as to evaluate critically the role of dominant and official forms of discourse in shaping the ways in which these actors interpreted social and ecological realities (Zimmerer & Bassett 2003).

3.3. A case study approach

3.3.1. Guyana

Although quantitative researchers would dispute the value of the knowledge that can be gleaned from a single case, Flyvbjerg (2006) counters that to gain knowledge about the social world, it is necessary to gain detailed and textured knowledge about particular cases. The case study is thus used as a way of revealing important knowledge on the complex set of relations, processes and features that may help us to better understand general phenomena (Tight 2010).

Guyana, illustrated in Figure 3.1, was chosen as the country of study for this case because it offers some interesting new perspectives on small-scale gold mining reform in a geographical region – Latin America – that has received less attention in the literature. As a highly mining-dependent country, with as much as 70% of its export revenues coming from the extractives sector (and 50% of this from gold alone), Guyana is a country where mining sector reforms are likely to involve significant 'trade-offs' (Hirons 2011a). In recent years, Guyana's uniquely large rainforest coverage (as much as 75% of its total land area) and its shrewd political leadership led to its participation in several major environmental initiatives, such as REDD+, which aim to re-orient forested countries' economic pathways in line with emerging 'sustainable' norms by paying them for environmental services (Angelsen 2017). This case study thus offers an opportunity to examine how the classic tensions between development and environment play out in a resource-rich developing country; and if, and how, extraction can co-exist with 'climate-conscious' development. As 'green' ASM agendas are relatively incipient in policy circles – as well as academic analysis – this thesis also enables a closer look at how these strategies are articulating themselves in practice, and what impact they are having on land users.

Figure 3.1: Map of Guyana highlighted within South America

Source: emapsworld.com

As its sector is dominated by small-scale operators who account for around 90% of the total operations and around 75% of the total gold produced, the case of Guyana is also a valuable opportunity to examine how a specifically *small-scale*- dominated gold mining sector is affected by reforms. In this sense, the findings will be relevant to scholars and policy-makers in other countries such as Ghana, Zimbabwe, Indonesia, and Cambodia, where a similar predominance of small producers defines the socio-economic and socio-ecological landscape. But whereas those countries are largely unregulated, Guyana's more mature and formalized ASM sector offers a further valuable opportunity to examine how formal institutions play out in practice – and thus to test how the various warnings of the critiques bear out in reality. As Guyana's mineral landscape is occupied by a large indigenous population, it also responds to various authors' calls for more place-based studies on ASM generally, but particularly those that may offer an opportunity to understand better the dynamics of indigenous participation – and implication – in ASM (Hennessy 2015; Lahari-Dutt 2017).

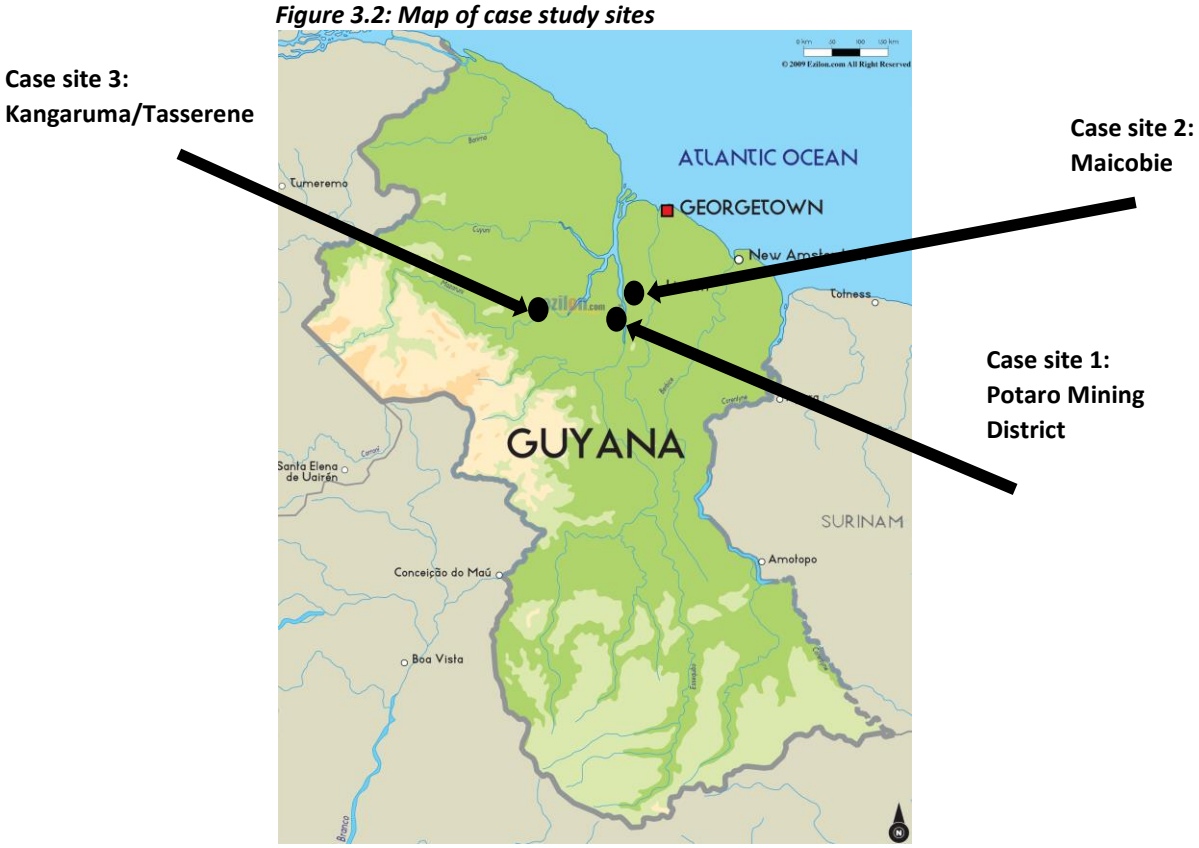
Further to Guyana's suitability as an object of research is my own suitability as researcher: as an Overseas Development Institute Fellow posted in Guyana between 2011 and 2014, I developed a thorough understanding of the country's political economy and geography and built up a substantial list of contacts across public, private, and non-profit sectors that would facilitate the research process. Thus, as well as bringing what I believe to be a fresh methodological approach to this area of study, I also brought something of an 'insider' perspective.

3.3.2. Three case sites: Potaro, Maicobie, and Kangaruma-Tasserene

In an effort to gain 'local', sited-based perspectives on the interactions between policies and political ecologies that went beyond Georgetown-based narratives and counter-narratives, three case studies were selected. It was decided that examining three sites that represented contrasting tenure arrangements – State lands, Amerindian titled lands, and Amerindian untitled lands – as well as diverse social, political, cultural, economic, and geographical contexts, would offer valuable comparative insights on how formalization policies were experienced and perceived across different settings.

As mining in Guyana predominantly takes place on State lands (which comprise 85% of Guyana's land area, whereas indigenous land comprises only 15%), it was decided that the extended case study on Potaro would provide a valuable opportunity to gain insights into the micro-practices of the mining sector and the possible implications for reform more broadly within Guyana's State Mining Districts. The two studies of indigenous Amerindian villages – of Maicobie and Kangaurma-Tasserene – were located deep within Mining Districts and were implicated in mining activity in various ways. They would therefore offer an opportunity to examine how the complex of issues pertaining to mining reform – issues such as access to technology, state monitoring, and understandings of environmental issues – played out in the unique institutional and socio-cultural contexts of Amerindian communities. Because all three sites had also all experienced various 'green' reform initiatives (including land titling policies, mercury-free projects, and alternative livelihood initiatives), they were considered potentially valuable sources of information about the challenges, effects, and impacts of potential 'green' mining reforms – and were thus considered 'instrumental' cases (Lewis-Beck et al. 2004).

Figure 3.2: Map of case study sites



Source: Adapted by author from Ezilon.com

While the three sites were therefore chosen for their theoretical relevance, these particular sites were also chosen for more practical reasons. They were all relatively proximate to each other; access to miners and mining areas within Potaro was enabled through the Guyana Mining School and Training Institute (GMSTI) and Geology and Mines Commission (GGMC), who also assisted with logistics; and access to the indigenous villages was facilitated by the Toshaos from the two indigenous villages who were both open and approachable.

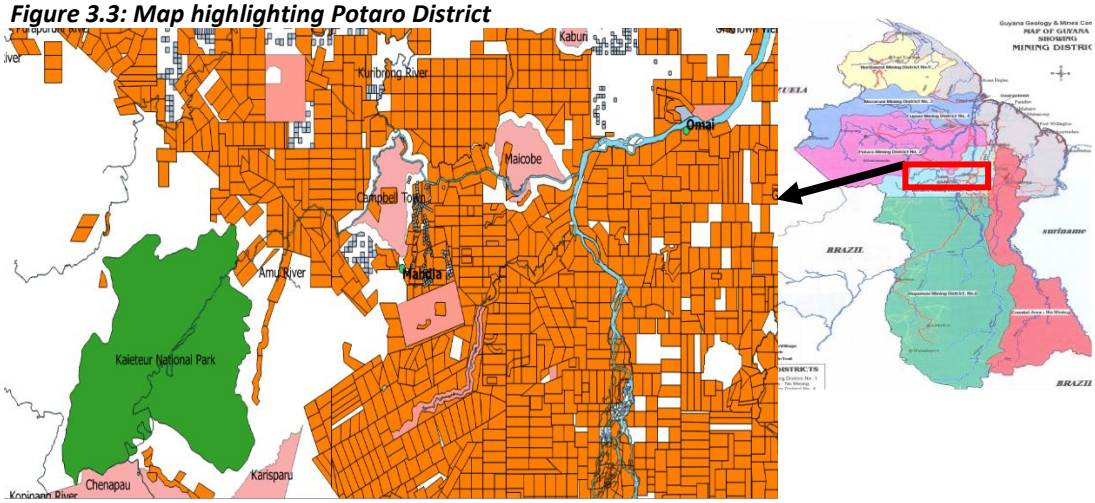
3.3.3. Case site characteristics

This section will provide some more detail on each case site that highlights their suitability as choices.

Site 1: Potaro Mining District

As a result of the early exploitation of gold deposits by the British Guiana Mining Corporation around the township of Mahdia in the late 19th Century, Potaro Mining District, located in the heart of the country between the Mazaruni and Essequibo Rivers, was one of the first interior regions to be developed for mining (Lowe 2003). Figure 3.3 shows the part of the Potaro District around Mahdia that was the focus of this case study. As can be seen from the orange blocks (which represent medium-scale mining properties), the area is covered in mineral properties, and is also home to Kaieteur National Park, shaded in green, and several Amerindian villages, shaded in pink. The British built roads, bridges, a hydropower station, and an airstrip, and introduced a range of technologies in order to exploit the alluvial gold deposits that occurred in quartz veins and riverbanks. The area was subsequently developed in the 1960s by St Lucians who were drawn to the region by promises of gold and the mountainous landscape which they believed resembled their home country, as per Image 3.1.

Figure 3.3: Map highlighting Potaro District



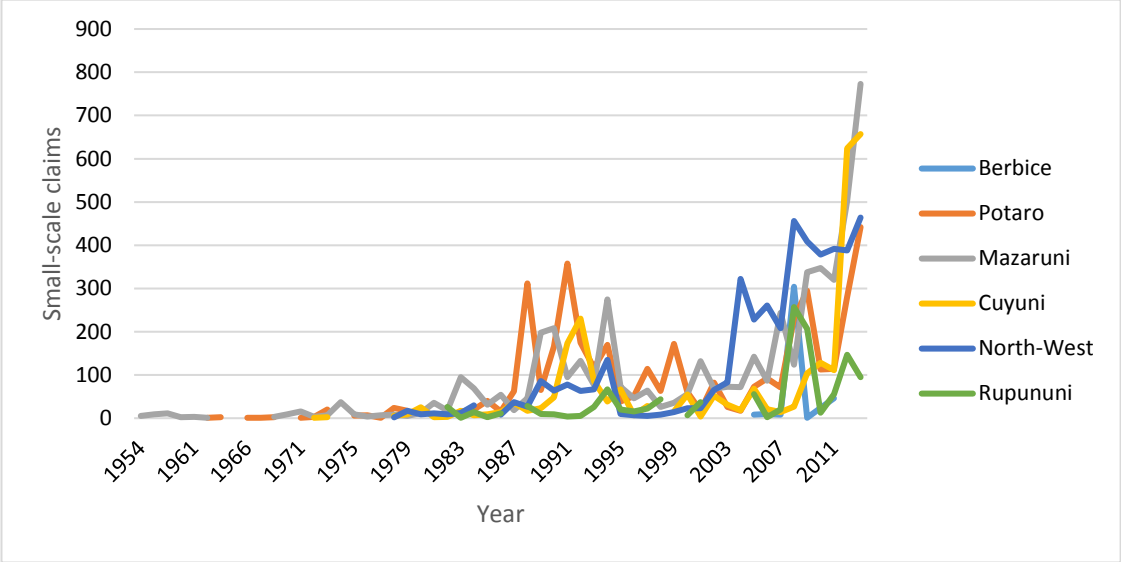
Source: Adapted by author from from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/; GGMC

Image 3.1: The Ebini Mountains from Mahdia

Source: Author

Although mining properties have existed since the late 19th century, existing mining claims in Potaro district began to be documented from the 1950s, as illustrated in Figure 3.4. These properties have increasingly coexisted with other forms of tenure, such as Kaieteur National Park, which was created in 1929, and several Amerindian villages, Maicobie, Campbeltown, and Kaburi, which were all granted their titles in 2006.

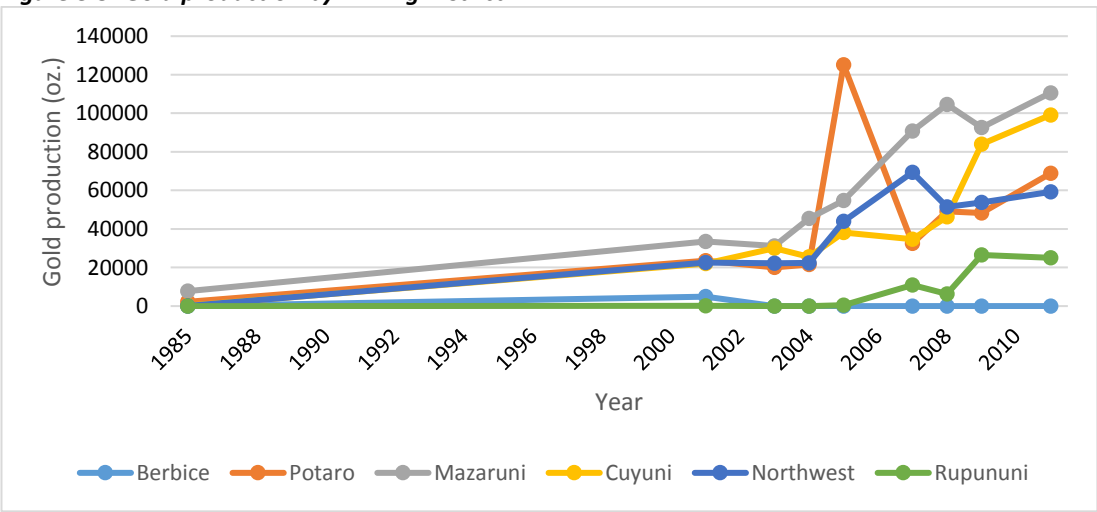
Figure 3.4: Small-scale claim applications by Mining District



Source: Adapted by author from GGMC

As Figure 3.5 shows, Potaro District has always been a major contributor to gold declarations. In the 1980s, in particular, there was significant river mining activity, and in the 1990s use of the 'missile dredge' became common on the Potaro River and its many tributaries. Despite the Cuyuni and Mazaruni Mining Districts taking over as the largest gold-producing regions – with the North-West district challenging Potaro for third place – Potaro has nonetheless continued to be a popular mining area due to the accessibility of the White Hole, Red Hole, and Saint Elizabeth mining areas that were auctioned to local miners in the 1980s following the departure of Canada's Golden Star Resources.

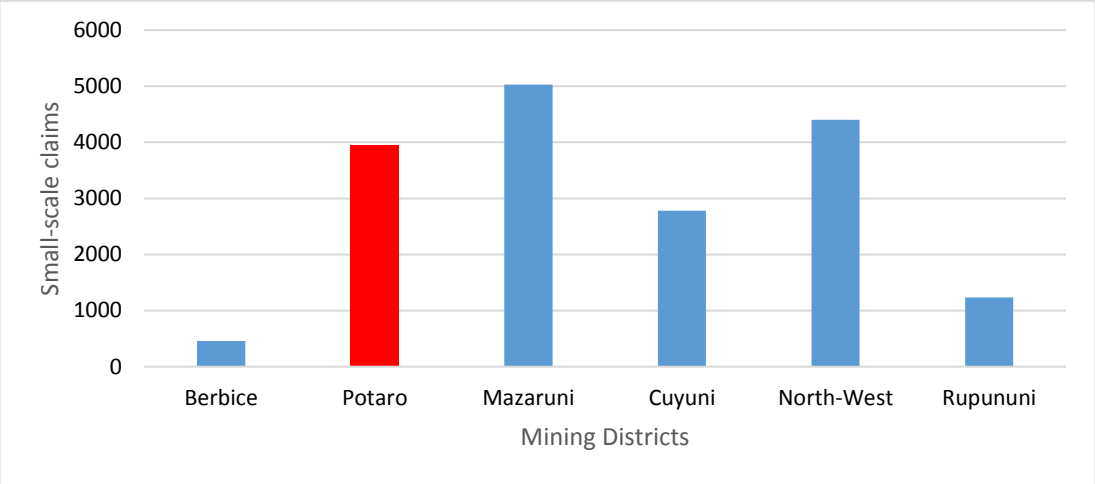
Figure 3.5: Gold production by Mining District



Source: Adapted by author from GGMC

In spite of local claims about reserves drying up, Potaro remains a popular destination for miners today, with one of the highest number of claims among all Mining Districts, as shown in Figure 3.6. This popularity stems from its relatively developed infrastructure, its relative accessibility (by road) from Georgetown (which make supplies cheaper than in other mining regions more dependent on river transportation), and the fact that Mahdia is a growing settlement that was recognized as a township for the first time in 2018.

Figure 3.6: Total small-scale claims in existence (2014)



Source: Adapted by author from GGMC

As well as being subject to national initiatives, the Mahdia area's accessibility to Georgetown means that it is frequently the focus of various pilot programmes and studies, including major interventions related to the GENCAP programme (which will be discussed in detail in Chapter 5). Mahdia, whose main street is illustrated in Image 3.2, has also been a major centre of recent activity and agitation around the new syndicate policy, with several local syndicates forming and applying for land.

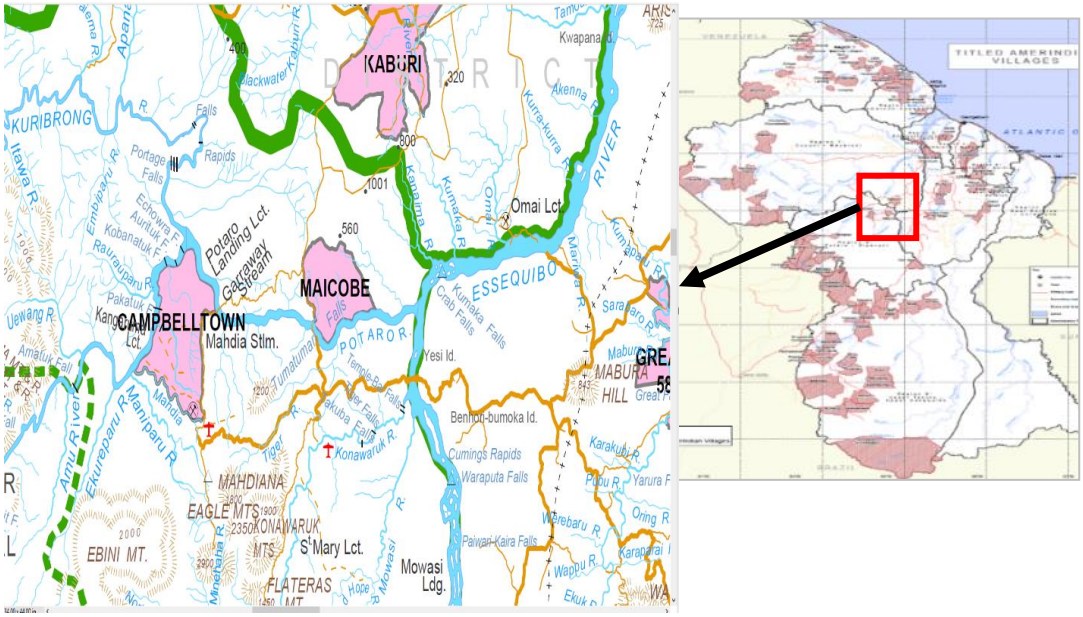
Image 3.2: Mahdia's main street

Source: Author

Site 2. Maicobie village

Maicobie is a titled Amerindian village located in the Potaro-Siparuni administrative district of Region 8, and also within Mining District 2, Potaro, as illustrated in Figure 3.7. The stretch of the Potaro River that runs through Maicobie is one of the oldest areas to have been mined in the country. Indeed, Image 3.3 below shows a British Guiana-era 'bucket dredge' that had been used in the early twentieth century but that was abandoned on the northern bank of the Potaro River near Maicobie by the British in the 1960s prior to Independence.

Figure 3.7: Map highlighting Maicobie village



Source: Adapted by author from GLSC

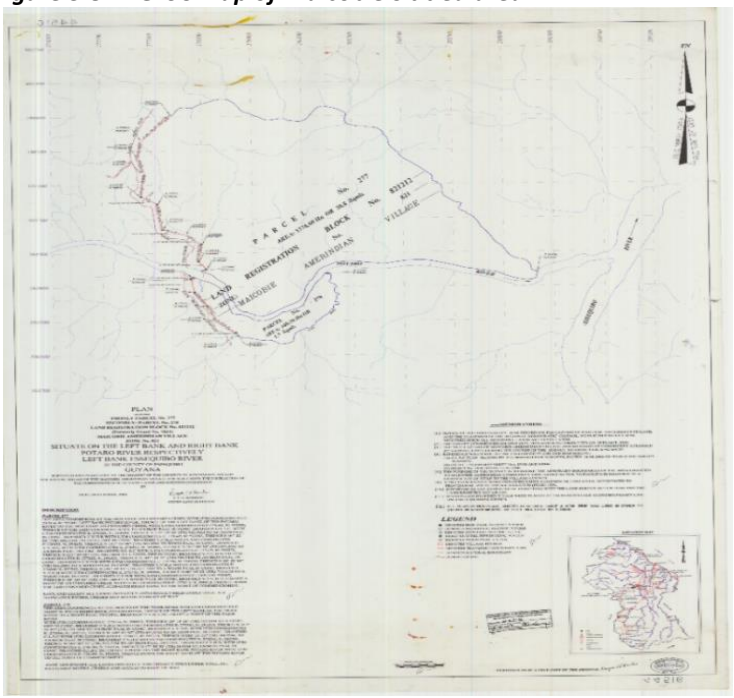
Image 3.3: A bucket dredge abandoned in the 1960s near Maicobie

Source: Author

The village – which has a population of around 540 people, most of whom work primarily as miners – obtained its title in 2006, as illustrated in Figure 3.8, having unsuccessfully lobbied successive governments for several years. However, since 2006 it has been the site of low-intensity conflict between miners and community members over the legitimacy and impacts of mining activity – significantly related to the fact that pre-

existing mineral properties appear ‘within’ Maicobie’s village title (Hilson & Laing 2017b).

Figure 3.8: A GLSC map of Maicobie’s titled area

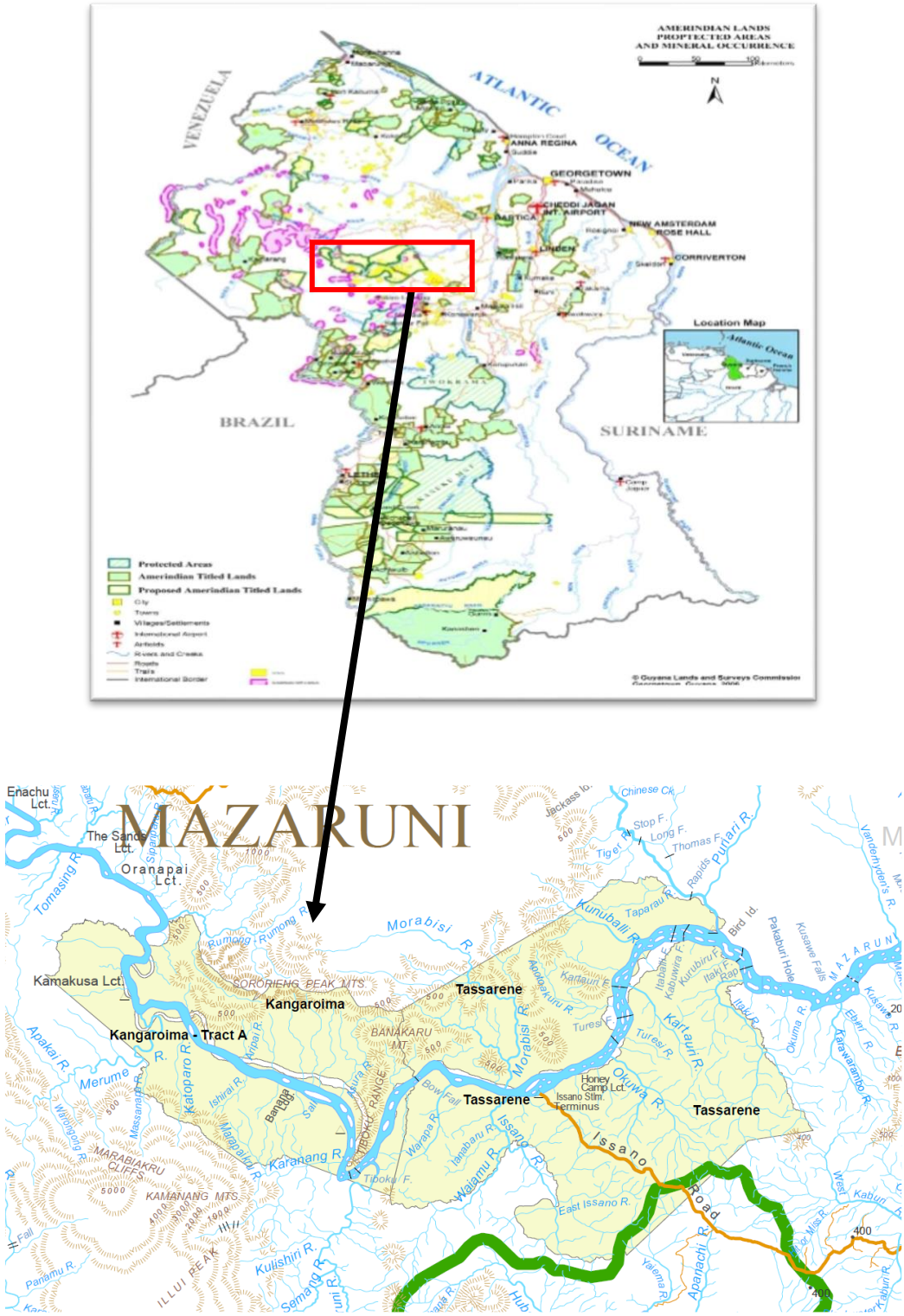


Source: GLSC

Site 3: Kangaruma-Tasserene

Kangaruma-Tasserene is a currently *untitled* twinned indigenous village located in the Mazaruni-Cuyuni administrative district of Region 7, and also within Mazaruni Mining District 3. The village, whose location is illustrated in Figure 3.9, is a predominantly Akawaio indigenous community of around 300 people that received its land title in 2012, only for it to be immediately withdrawn. This situation, as well as the village’s relatively ‘traditional’ livelihood pathway – and its increasing inundation by mineral properties – have seen it receive media sympathy in recent years.

Figure 3.9: Kangaruma-Tasserene's proposed titled area



Source: Adapted by author from GLSC

3.4. Data collection and methods

3.4.1. Fieldwork schedule

In the spirit of ethnographically-informed geographical research that aimed to gain a situated understanding of the context, this thesis depended significantly on field-based data collection during which a range of methods were employed to obtain a diversity of data types. Fieldwork was carried out in Guyana over a 13-month period between May 2016 and June 2017, involving nine months in-country across three separate trips, and was preceded by a six-month preparatory process in the UK during which an ethical review was completed, a fieldwork plan was drafted, and the necessary logistical and practical preparations were made. The first trip was focused on Georgetown-based interviews while permits for Amerindian villages were pending; the second trip focused on the Potaro case study; and the third trip focused on the two Amerindian village case sites, Maicobie and Kangaruma-Tasserene.

Although a specific research visa was not necessary, an Environmental Protection Agency (EPA) research permit was required in order to conduct research. Further to this EPA requirement, to visit Amerindian villages, it was necessary to obtain written permission from the specific Village Councils and the ultimate approval of the Minister of Indigenous Peoples' Affairs. For the research conducted in the mining areas, I was required to gain the written permission of the GGMC Commissioner. Further, in order to observe GMSTI courses, engage with miners on those courses, and interview and travel around with GGMC officers, I was required to write further requests to the GGMC.

Overall, in spite of the fact that it is not uncommon for researchers to be refused permits to conduct social research in Guyana (particularly given the politically sensitive nature of research on mining and Amerindian issues), I was able to obtain all of the clearances I required, and except for a small number of requests for data from the GGMC that were not accepted, I was able to obtain all of the data I considered necessary to answer the research questions.

3.4.2. Data collection methods

Political ecologists recognize that a policy "problem" must be seen from inside the "specific historical and geographical context" (Leach & Mearns 1996, p. 446). Political ecology is thus heavily weighted towards ethnographic methods that explore the interactions between knowledge, power, politics, economics, and the biophysical environment at particular sites of micro-struggle (Zimmerer & Bassett 2003). However, in the spirit of an approach that recognizes the continuous interactions among actors, institutions, and discourses across multiple scales, it is also interested in how these sites are discursively and materially linked to national and global political-economic processes and forms of dominant knowledge (Paulson et al. 2004). In this spirit, a range of methods were employed that sought to capture the continuous triangulation between the 'local' and the 'global' – as well as the material and the discursive.

3.4.2.1. Narrative and document analysis

The collection of a wide range of formal and informal documents was an essential research method for this thesis (Bryman 2004). In order to gather a comprehensive picture of the gold mining sector and historic reform agendas in Guyana that could contribute to answering sub-questions one and two – and provide background for question three – I collected an extensive range of documentation that included laws, regulations, and government and non-government reports on mining, land tenure, environmental projects, and Amerindian issues. Much of the mining data were found in the GGMC library, while other documents were obtained at the National and University libraries. I also used the Stabroek News, Kaieteur News, Demerara Waves, and Guyana Chronicle archives to search for historical stories and information about mining-related issues, and to track the course of national and local narratives on mining and reform.

3.4.2.2. Secondary data collection

As well as this more text and narrative-based data, I also collected a range of complementary quantitative and spatial data. This primarily comprised mineral property and production data and maps from the GGMC, but also included other environmental data from the Guyana Forestry Commission (GFC) and the Ministry of Natural Resources and the Environment (MNRE), and general socioeconomic data from government and non-government sources such as the Bank of Guyana, Bureau of Statistics, and Ministry of Finance. As the public faces of recent and well-funded programmes, the Guyana

REDD+ Investment Fund (GRIF) and Low Carbon Development Strategy (LCDS) websites were sources of valuable data on the latest policy programmes. Newly-established, REDD+-funded government GIS portals contained a wealth of valuable (and unexpected) mineral property data that added a strong spatial element to the research. By manipulating this raw mining data in both Excel and QGIS I was able to disaggregate and filter it to identity patterns and build tailored maps illustrating powerful socio-political dimensions such as time-series property distributions and ownership concentrations. These data also offered a valuable visual tool for contextualizing political-ecological dimensions, such as ecological impacts and overlaps between land uses and users.

3.4.2.3. Semi-structured interviewing

While quantitative and documentary data sources provided me with generalized perspectives on the political ecologies of mining and reforms, conducting interviews was crucial in "gathering information about the underlying context" in which policy processes were developed and implemented, and in learning about actors' personal and subjective perceptions, interpretations, and opinions of processes and entities (Tansey 2007, p. 767). Indeed, interviewing reflects the inherent methodological commitment in political ecology to exploring subjective impressions and experiences in order to illuminate counter-narratives (Forsyth 2004).

In total, I conducted 143 semi-structured interviews across a representative sample of Government officials, NGO representatives (both national and international), civil society actors (from academia and the private sector), mining sector actors, Amerindian organization representatives, and Amerindian villagers – as per Table 3.1. Although some interviewees inevitably had more than one 'identity' – for example, some Amerindian villagers were also miners – interviewees were assigned a type in the coding strategy that reflected their dominant identity in the context in which they were being interviewed. For example, if they were an Amerindian being interviewed in their own village (but left the village to mine), they would be assigned as an 'Amerindian villager'. A full list of interviewees is in Annex II.

Table 3.1: Semi-structured interview break-down

Interview type	Number of interviews
Government official	38
NGO	20
Civil society	5
Mining sector	46
Amerindian organization	11
Amerindian villager	23
Total	**143**

Interview questions were structured differently according to who the interviewee was, with interviews with officials focusing primarily on examining the national political context of mining and the environmental reform processes (research sub-questions one and two). Interviews conducted at the case study sites examining sub-question three were focused more on interviewees' experiences and perceptions of mining and mining reform within their own contexts. Within these parameters, the conversations were allowed to flow, and typically lasted around an hour.

Interviewing for the phase targeting sub-questions one and two followed a 'snowball' sampling approach, whereby an initial list of key persons was generated based on my already-existing knowledge of the country, with subsequent relevant persons identified by both asking for recommendations from the interviewees or by discovering new interviewees through other channels (Tansey 2007). Overall, thanks to my prior knowledge of the context and my pre-existing contacts, I was able to access a broad and diverse sample of participants that reflected a wide range of sectors and concerns. These interviews were mainly organized in-country via email, telephone, or in person, with a few taking place over Skype, where the relevant persons were not in-country.

For these interviews, I engaged with a wide range of key political, commercial, and community actors, including government and former-government officials, environment agencies (such as the GFC, GGMC, and the EPA), donors (such as the World Bank and IADB), Norwegian officials, NGOs (such as Conservation International), Amerindian organizations, and mining groups (particularly the Gold and Diamond Miners Association

(GGDMA) and the Guyana Women Miners Organization (GWMO)). Where consent was given, interviews were recorded and then transcribed, with a conscious effort to retain the idiomatic forms of language used by interviewees.

For the phase of interviewing targeting sub-question three, sampling was based on a combination of purposive techniques (in interviewing key decision-makers, such as Toshaos), as well as snowball and convenience sampling, and within each case I attempted to capture a range of participant profiles and views (Bryman 2004). These interviews – with miners, villagers, and community members – took place in Georgetown, at case study sites, and in transit between landings and mining operations in the interior. They were often unplanned and improvised. As a result of interviewees' lack of familiarity with being interviewed, they were often less comfortable about being recorded, and so many of the discussions were unrecorded and took place more informally, sometimes in bars or restaurants.

For these interviews, I generally made notes and tried to copy down important quotes. Although Focus Group Discussions (FGDs) were not an anticipated research method, on several occasions in Kangaruma, impromptu FGDs announced themselves as small group discussions expanded into almost structured debates led by the Toshao. These proved valuable in gaining a range of community perspectives, but, as with many such discussions, it was difficult to escape the perception that they were being guided by the more dominant community members, with younger members appearing particularly reluctant to participate (Mosse 1994). Towards the end of the fieldwork, I concluded primary data collection with some Georgetown-based interviews which sought to gain some alternative perspectives on the data gathered from the case study sites.

3.4.2.4. Participant observation and field visits

As Herbert (2000, p. 551) suggests, ethnography in geography can uniquely explore lived experience in all its richness and complexity, and is the "optimal way to illustrate and explicate the oft-stated connection between the life world of a social group and the geographic world they construct." Thus, as well as conducting semi-structured interviewing at the case sites, I also conducted 'multi-sited' ethnographic research based on more extensive and informal engagements with mining stakeholders and affected communities (Marcus 1995). This research, which took place in the natural context of the

participants' during daily activities – at around 50 different mining workgrounds in Potaro and Mazaruni districts; in bars or cafés during days off; in the landings of Bartica, 69 Miles, and Issano during travel stopovers; or at the farm (in the case of Maicobie and Kangaruma villagers) – was characterised by a high degree of informality. Receiving special permission to do so, I also attended several weeks of mining school training at the GMSTI. This gave me an ideal opportunity to observe how the state was communicating reform priorities to miners and enabled me to immerse myself in the mining culture. Across these sites, I not only gathered interpretations and experiences of mining participation, reform impacts, and other livelihoods concerns from informal discussions with a range of stakeholders; I also built up my own understanding of mining practices and peoples' main issues of concern by listening and observing.

3.4.2.5. Field notes and diary

During the whole research process, I kept a daily diary documenting my thoughts and ideas related to the conducting of the research. By the end of fieldwork this document was more than 100,000 words long, and was a source of rich empirical detail, as well as serving as a record of ongoing intellectual endeavour.

3.4.2.6. Photographs

In order to illustrate the micro-practices of mining, environmental impacts, and other social and political dimensions of mining reform (such as miners' meetings), I took a number of photographs and short films. Many of the original photographs appear in the thesis, with other images (such as aerial photographs and specific maps) accessed over the Internet from secondary sources. These images are important visual elements in the thesis's overall narrative.

3.4.3. Data analysis

Practically, spatial data was edited using QGIS software, while most quantitative data was edited and collated in Microsoft programmes such as Excel and Word. The transcribed interview data was analysed and coded for theme and content using NVIVO. The aim of data analysis was to filter the data according to the analytic areas of interest of each research sub-question, with a view to answering the thesis's over-arching question.

With respect to question one, the aim of analysis was to collate all forms of data to provide a rich portrait of the complex range of political, economic, social, technical, ecological, and administrative dimensions that had shaped the unique mining context in Guyana – thus building a perspective of the national political ecology of mining. A range of largely secondary data was examined, from historical and policy texts on the sector to spatial and quantitative data that revealed trends ad patterns. These data were complemented with qualitative interview data to fill in any gaps.

In examining the local, Guyanese articulations of the mainstream reform discourse in response to question two, the data were filtered in terms of the specific identifiable phases of reform, and the actors, interests, events, and narratives that had shaped the reform approach across these phases. Data examined were policy documents, media commentary, and qualitative interviews. To establish the particular Guyanese articulation of the mainstream reform storyline as it pertained to both State and Amerindian lands, the data were also analysed in terms of the three components of the mainstream reform storyline: the rationale for reform; the exact institutions that were to be installed or introduced; and the anticipated mechanisms of change.

For question three, the transcribed interviewed data were filtered at a general level in NVIVO according to how the experiences of local actors at each case study site appeared to conflict with, or challenge, the Guyanese articulation of the mainstream storyline on reform that was identified in Chapter 5. Particular attention was paid to how well (or not) the approach responded to different actors' core grievances and environmental priorities, how these actors experienced and felt the effects (or non-effects) of the reforms, and which factors appeared to be undermining the fulfilment of the state's (and local actors') reform priorities. These qualitative data were triangulated with other forms of data, such as spatial and quantitative data – not to verify or challenge interviewees' accounts, but to contextualize and understand varying perceptions and experiences.

Finally, in order to address question four, the analysis synthesized observations of the phenomena that were misread, oversimplified, and omitted across the study sites by the mainstream storyline. As well as working towards a better understanding of why policies were having the effect that they were having, this activity was also aimed at showing how the thesis's findings supported or challenged the various theoretical critiques of

formalization-centred approaches to mining reform that were discussed in Chapter 2. These theoretical critiques related, *inter alia*, to the politics of policy framings, the drivers of exclusion and informality, and the factors affecting policy effectiveness.

3.4.4. Ethical issues

3.4.4.1. Positionality

My prior experience working on Guyana's REDD+ projects presented me with the opportunity to use my knowledge of public life to my advantage in my research. Indeed, having a wide range of contacts to whom I was known and trusted possibly served to my advantage in gaining access to key decision-makers. However, this prior knowledge also demanded that I remained reflexive about any preconceptions or prejudices that I may have brought to the research (Bryman 2004).

Although my research was not explicitly designed to be critical, the poor media reception that the Guyanese government (and the GGMC in particular) had been receiving prior to fieldwork made many actors I approached particularly wary. There is always, after all, a strong incentive for elites to engage in self-censorship, guardedness, or hostility in order to keep national and international reputations intact (Neal & Mclaughlin 2009). Maintaining a non-threatening approach and underlining my professional credentials was important in general, but particularly when approaching the Ministry of Indigenous Peoples' Affairs in order to secure permission to access Amerindian villages.

In addition to being perceived with suspicion for asking questions about issues that are considered 'sensitive', my own identity as a white, male, British researcher made it inevitable that I would be 'othered' in various ways – due to class, gender, ethnicity, attire, accent etc. – that confirmed the irreconcilable position of difference that I would find myself in during fieldwork (Sultana 2007). This may have been given an additional edge in Guyana – and may have sharpened a latent resentment towards me – due to the fact that Guyana is a former British colony (Kovats-Bernat 2002).

In this regard, I found that my presence was often greeted with particular bemusement in the remote mining areas where I often was informed that I was assumed to be a 'spy', a GGMC insider, or a foreign miner prospecting for land. It took some weeks before my presence in Madhia as a researcher, for example, was accepted at face value, and, even

by the time I left the region, I still perceived that the ambiguity around my presence was never completely resolved. It is inevitable that these suspicions will have mediated my interactions with miners, who are renowned for secrecy when it comes to discussing their gold mining operations (Peluso 2018).

3.4.4.2. Data protection

Guyana's politically-charged atmosphere meanwhile made it crucial that I guaranteed the anonymity and safety of interviewees, always protecting their identities in order to avoid creating vulnerabilities (Bonnin 2010). This was done by meeting interviewees discretely, and ensuring that all data was protected and anonymized (Wood 2006). Recorded interviews and other data were stored on encrypted hard drives in order to protect sources and avoid leaks or indiscretions.

3.4.5. Methodological challenges and limitations

3.4.5.1. Data, secrecy, and suspicion

As mentioned in an earlier section, obtaining clearances and permits was a logistical challenge; but so was the process of gathering data itself, even once the permit had arrived. In many cases, the kinds of computerized records available in other countries were not available in Guyana, and much data on mining was either not recorded, or not made available. Bulkan and Palmer (2016, p. 8) for example bemoan how the lack of "disaggregated data" recorded by the GGMC obscures a better understanding of phenomena such as tributing. Such circumstances demanded that I maintained a persistent but philosophical mind-set that was able to accept that sometimes data simply did not exist.

While it is true that some data do not exist, it is equally true that other data do exist but will not be shared, even when they are, in theory, a matter of public record. Officials were naturally suspicious of my motives, in spite of the supporting documentation I provided, and in a few cases, I was unable to obtain the data I requested. The tendency within the mining sector in particular for informal, 'off the books' transactions means that miners were often reluctant to disclose information about their activities. Details about their gold recovery, for example, which would be important for assessing the efficiency of production or the potential for technological interventions, would rarely be disclosed. Most miners were believed to be routinely under-declaring lest others – such as other

miners, landlords, or officials – learned the true nature of their practices and tried to grab their land (Heemskerk 2005).

This secrecy and suspicion extended to Amerindian villages, where villagers appeared reluctant to share information with an outsider whose motivations may have appeared opaque to them. In particular, I got the impression that Amerindian villagers were reluctant to openly admit participation in the gold mining sector, for fear that the fairly coherent narrative of Amerindian victimhood vis-à-vis mining would be disrupted, and the moral case for Amerindian land claims be undermined.

3.4.5.2. Logistics

Further to the challenges of data availability was the issue of transportation and communication in such a remote geographical context. Getting around was expensive and time-consuming and was often compounded by inefficient bureaucracy. As I was on a limited budget and a time-bound visa for each trip, such a complex compounded the pressure to complete the data collection process. For example, connecting trips I had planned with the GGMC often had to be delayed by several weeks as the relevant person or agency had not received their funding on time. Such realities demanded that I was always flexible and had an alternative arrangement in place.

3.4.5.3. Security

While some of my research involved collecting data in Guyana's capital, Georgetown, I also travelled to more remote regions, such as Amerindian communities and areas where gold and diamond mining is prominent. While in these environments I was prepared for the often intemperate mining camp environments and was vigilant about the risks associated with being isolated (Ballard & Banks 2003). I mitigated these risks by generally travelling with someone who was familiar with the communities and areas I visited. For example, when travelling to some mining operations in the Mazaruni and Potaro Mining Districts, I was assisted with transportation by GGMC officers. The unavoidable consequence of this, of course, was that I was assumed to be institutionally connected with the GGMC – a perception that is likely to have shaped miners' perception of my role and conditioned their behaviour and responses to me.

3.4.5.4. Gender bias

Guyana's mining world, and the interior in particular, is a male-dominated environment (IADB 2015). Landowners, dredge owners, and other labourers, are generally men, with women's roles reserved to those in the commercial sex industry or as cooks. Although a specific gender focus was not part of this thesis's research aims, every effort was made to capture a balance of gender perspectives across all categories of interviewees. In this context, although only 36 out of 143 (or 25% of) interviewees were women – a respectable proportion considering the absence of women in positions of economic and political power in general in Guyana – future research in this area could aim to address this imbalance.

3.5. Summary and conclusion

This chapter has detailed the methodological approach to this thesis. It first outlined the ontological and epistemological perspective of the thesis, connecting them to my own positionality. It then discussed the choice of cases – both Guyana, and the sub-national cases within Guyana – and discussed the methods that were used: narrative and document analysis, quantitative and spatial data collection, interviewing, participant observation, and field visits. It finished by discussing relevant ethical issues and methodological challenges.

An overview of this methodological approach, linking aims, questions, chapters, methods, and data, is presented in Table 3.2.

Table 3.2: Summary of methodology

	Research aim	Research question	Chapter	Method	Data
1.	To understand the national political ecology context of mining in Guyana.	What are the unique national political ecologies of gold mining in Guyana?	4	• Document and narratives analysis • Interviews with policy-makers • Collection and analysis of national level quantitative data • Collection and analysis of maps	• Policy documents, laws and regulations • Newspaper articles • Interview transcripts and recordings • Quantitative data on mining in Guyana • Maps and GIS data
2.	To understand the emergence and articulation of environmental mining interventions.	How does the mainstream 'storyline' on formalization-centred environmental reform articulate itself in this context?	5		
3.	To understand the experiences and perceptions of mining reform interventions at the ground level.	To what extent do reform experiences across different political ecologies of mining in Guyana support or disrupt the mainstream 'storyline' about formalization-centred policy approaches?	6, 7, 8	• Document analysis • Collection and analysis of quantitative data • Collection and analysis of maps • Interviews with non-elites • Ethnographic research at case study sites	• Policy documents and laws and regulations • Newspaper articles • Quantitative data on mining • Maps and GIS data • Interview transcripts and recordings • Field notes, photographs
4.	To understand the contribution of this thesis to the theoretical and policy debates on formalization-centred ASM reform approaches.	What are the implications of these findings for the theoretical and policy debates on formalization-centred policy approaches to 'green' or 'sustainable' mining?	9	Synthesis	All of the above

Source: Author

Chapter 4: Guyana's national political ecology of gold mining

4.1. Introduction

This chapter will examine the national political ecology of the gold mining sector in Guyana, in answering research sub-question one. The three main sections of this chapter will examine the sector's socio-technical, socio-ecological, and administrative characteristics; its temporal and spatial trends; and the contention that has been generated and intensified by these trends. In each section, the analysis will focus on trying to understand the way in which a dynamic interplay of economic, political, social, and environmental forces has shaped the aspect of interest. The illumination of the particular character and dynamics of the sector will contextualize the complexities – and the range of normative concerns – that reform agendas, to be looked at in Chapter 5, should theoretically be prepared to recognize and acknowledge; it will also foreshadow the political ecology dynamics that will be examined in more detail across the case studies in Chapters 6, 7, and 8.

4.2. Mining sector characteristics

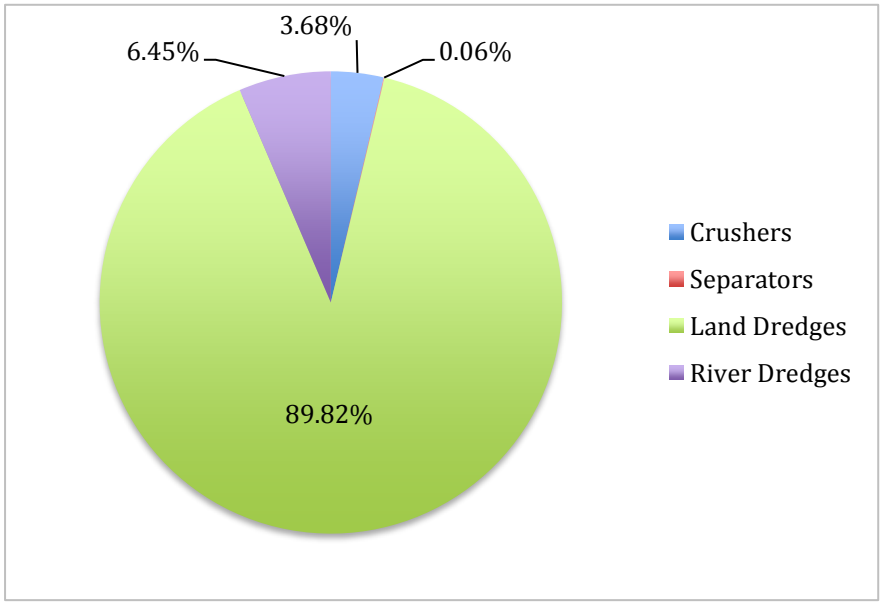
4.2.1. Socio-technical context

Until the 1980s, the majority of gold mining in Guyana was done in either shallow 'placer deposits'[13] using a *batel* or on the waterways using rivers dredges (both those manned by divers and the increasingly popular unmanned 'missile' dredges). Such a socio-technical context barely represented an advance on the original commercial[14] gold mining that is believed to have commenced around the mid-19th century in Guyana, when small numbers of adventurous miners known as 'pork knockers' began to increasingly brave the interior in search of gold and diamonds (Clifford 2011). These miners were largely composed of freed African slaves who, lacking savings or property, were drawn to the low capital-intensive nature of artisanal mining and the lure of an independent existence (Thomas 2009; Trotz & Roopnaraine 2009).

[13] These are deposits that have been carried by rivers and streams within eroded material.
[14] Amerindians are believed to have mined gold earlier than this for exchange and jewellery (Colchester 1997).

When high-grade river deposits began to decline in the 1990s, hydraulic land dredging took over (Wotruba et al. 1998). Today, dredges – essentially, mechanized mining set-ups comprising plastic piping, diesel-powered engines, wooden sluice boxes, high-pressurized water hoses, and water-pumps – dominate the sector, comprising approximately 90% of all gold-producing equipment, as per Figure 4.1 (IADB 2015). In terms of dredge sizes[15], the 6-inch is the most common, followed by the 4-inch, as illustrated in Figure 4.2. The 6-inch is used by both larger and smaller operators because it is considered the most cost-efficient. The 4-inch is commonly used by the smaller operators who cannot afford larger dredges and is also the dredge of choice for some diamond miners or those working diamond grounds. On the river, 12- and 14-inch dredges are the most common. All dredges are powered by diesel, which is the biggest economic input into the mining process, estimated to represent around 30-40% of total costs (IADB 2015).

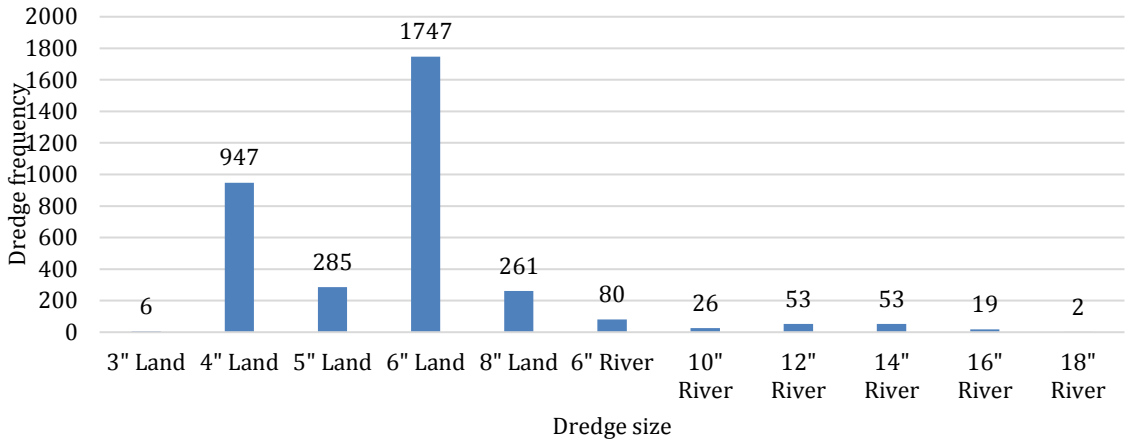
Figure 4.1: Relative proportion of gold processing equipment used in the industry



Source: (IADB 2015)

[15] The 'inch' measurements refer to the diameter of the pipe that sucks up the gold-bearing gravel and sand from the mining pit. The greater the diameter of pipe and the more powerful the engine, the greater the amount of material that can be passed over the sluice box, and – theoretically – the greater the velocity of gold extraction.

Figure 4.2: Land and river dredges by size (2015)



Source: (IADB 2015)

This current socio-technical context is considered to be a result of several developments. Firstly, the arrival of larger companies in the 1990s, which stimulated a local interest in new mechanized technologies; secondly, the arrival of Brazilian *garimpeiros*[16] who brought innovations such as *dragas*; thirdly, the local development of new technologies (such as the gravel pump); and fourthly, the increasing accessibility of cheaper machinery (such as Chinese engines in the 2000s, as per Image 4.1) (Bulkan 1998; Healy & Heemskerk 2005; Lowe 2006).

Image 4.1: An abandoned Chinese engine

Source: Author

[16] Thousands of g*arimpeiros* entered Guyana illegally in the 1990s bringing new technologies (such as the *draga*) and practices (such as the use of mercury in the mining pit itself), following a growing crackdown by the Brazilian government in response to ecological degradation in the Amazon (IADB 2015). The Guyanese government initially regularized many of these miners, but later drove many of them out in the 2000s under *Operation El Dorado* after their practices became too destructive (Guyana Chronicle 2012).

4.2.1.1. The gold recovery process

Land dredging is a rudimentary method of production according to which land is cleared and a pit dug, either using an excavator (as in Image 4.2) or a high-pressurised water jet (as in Image 4.3). A jet is then used to break down the gold-bearing mud and sand material, which is then sucked up using a pump, and passed over a sluice box (as in Image 4.4).

Image 4.2: An excavator opens up the mining pit

Source: Author

Image 4.3: A jet man breaks down the pit wall

Source: Author

The sluice box catches the heavier material (the gold and sand) in mats, as the lighter particles run off as ‘tailings’ (preferably into a tailings pond). Although the sluice box is relatively easy and cheap to operate, it is, however, extremely inefficient, with recovery rates ranging from 20% to 40% in Guyana, meaning that 60% to 80% of the gold is lost in the tailings and middling material (Lowe 2000).

Image 4.4: The slurry is pumped up over a sluice box

Source: Author

The mats are then emptied out into another container where the gold-bearing material is mixed with mercury during amalgamation (as in Image 4.5).

Image 4.5: Mats are emptied into a container for amalgamation

Source: Author

Finally, the gold-mercury mixture is then dried and burned using a blowtorch or retort to leave the raw gold (as in Image 4.6).

Image 4.6: The raw gold is weighed

Source: Author

While panning with a *batel* (as in Image 4.7) is no longer a major form of production, it is still use by pork knockers and labourers to extract small amounts of gold, as well as being utilized in the final stage of the gold recovery process.

Image 4.7: A miner pans for gold with a batel

Source: Author

River dredging, especially using *dragas* (as in Figure 4.8), remains popular, and has experienced a resurgence as newer forms of powerful technology have enabled further gold recovery in already-mined areas. *Dragas* are however considered to be a major cause of river degradation, especially due to the highly damaging 'cutter head' technology shown in Image 4.9 that bores into the river banks and river beds (GHRA 2017).

Image 4.8: A draga plies the Potaro River

Source: Author

Image 4.9: The 'cutter head' part of the draga

Source: Author

4.2.1.2. The division of labour in the backdam

The technological methods described above require a range of different tasks and jobs, creating social differentiation at the operational level. A typical 6-inch operation will see approximately six men working on one pit – with a General Manager (a 'GM') overseeing the operation for the dredge owner (who is often absent from the backdam), and a further four or five men (typically Amerindian or Afro-Guyanese) working in and around the pit itself. These workers will perform a range of tasks that include manning the water jet (done by a 'jet man'), sucking the gravel from the 'marrack hole' to the sluice box (done by the 'marrack man'), clearing unwanted debris such as branches and rocks from the pit (done by a 'pit man'), and watching over the whole operation for safety issues (the 'watchman'). Amerindians tend to be favoured as workers – especially by Brazilian miners, who prefer them to non-indigenous Guyanese for their superior work ethic.

Most operations that can afford it will also have a designated cook (known as a *bahir*), often a woman drawn from the local Amerindian village who is typically paid a fixed wage. If the mining is deep (below around 20 feet) and the operation can afford it, it will use an excavator (known as a 'charlie') to open out the pit, remove debris such as trees or rocks, and pile overburden material away from the pit (IADB 2015). The majority of pit accidents and deaths are caused by overburden or pit walls falling on workers in the pit, with these events generally occurring where the operation has not been able to afford an excavator. Only the wealthiest miners own their own excavators, with most that use one hiring them (and the operator) for a few days at a time.

Workers are expected to work for ten hours a day for several weeks at a time, before having a few days off during which savings are typically spent on alcohol and prostitutes (Veiga 1997; IHRC 2007). Workers are typically paid a percentage of the operation's gold yield, with the exact terms and conditions depending on the technology being employed, the nationality of the dredge owner (and worker), the perceived productivity of the worker, and the amount of gold being produced. For example, working on an operation *with* an excavator is rewarded at a lower rate than without one because it is considered 'easier' work as the overburden does not need to be removed manually.

Gold is typically extracted from the sluice box (a process referred to as 'washing down') every few days, depending on factors such as the weather, the time of year, and the anticipated yield. Most dredge owners or GMs wash down in front of workers to minimize suspicions of fraud, deceit, or envy, which are common in the interior. Workers can earn as much as 7.5% of gold production on a Brazilian operation without an excavator, and around 5% of production on one with an excavator. Workers on Guyanese operations earn less, with those on operations with an excavator making as little as GY$3,000 (US$14) per ounce, which is only around 1.5% of gold production at 2017 prices, or GY$3,500 US$17) per ounce without an excavator. The difference in pay between Brazilians and Guyanese is allegedly because Brazilians smuggle most of their gold out of the country, therefore enabling them to pay higher wages (Interview 118).

If an operation is producing around 20 ounces of gold a month (the 'break-even' amount typically cited by miners working on 6-inch operations), workers may earn as much as GY$200,000 (US$1,000) per month on a Brazilian operation – a salary comparable with a senior-ranking civil servant – and around GY$60,000 (US$300) per month on a Guyanese operation (a salary comparable with a school teacher or nurse). Excavator operation is the most prestigious and well-remunerated job, with these workers earning as much as GY$70,000 (US$350) per hour.

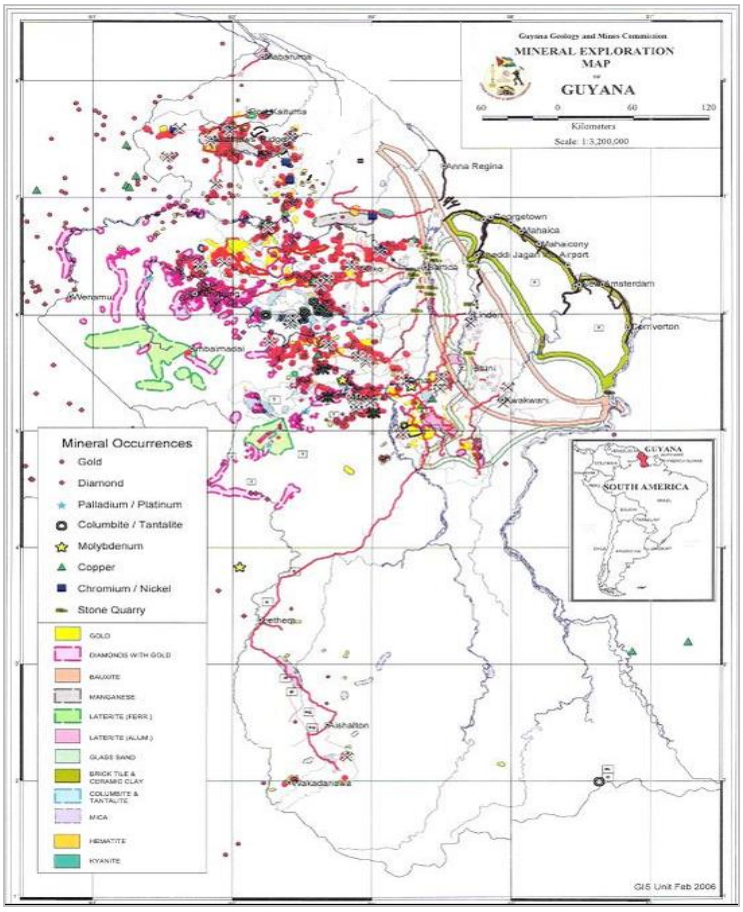
4.2.2. The socio-ecology of dredging

Dredging itself is a highly dynamic and non-linear activity, with many miners describing decision-making as characterized by a 'herd mentality' according to which dredge owners follow 'word of mouth' information about the latest big 'shout'. Nevertheless, to the extent that it is "inexorably constrained by geological, hydrological, and biological forces" (Bunker 1989, p. 592), the interactions between ecological and social factors do follow some patterns.

Ecologically, the location of alluvial gold and the requirement of water as an input into mechanized dredging means that activity tends to be clustered around rivers and creeks (IADB 2015). Moreover, the existence of some geological data about the location of gold deposits means miners do have a vague notion of where gold is located – knowledge that is, of course, partly guided by knowledge of previous deposits. Figure 4.3, for example, shows a mineral exploration map, which synthesizes British Geological Survey (BGS) data with GGMC's own prospecting work to offer a guide to miners on mineral locations.

These data are however considered highly inaccurate and open to manipulation (Interview 142).

Figure 4.3: Mineral exploration map of Guyana



Source: GGMC

Once mining has commenced, a further complex combination of social and ecological factors will continue to shape dredging decisions (IADB 2017). For example, if the deposit is found to be deep, the availability of earth-moving equipment (needed to 'open up the pit'), the cost of diesel (required to power the expensive earth-moving equipment and other engines and generators), and the time of year (an imminent rainy season will increase the likelihood of the pit dangerously flooding) will all be factored into a decision to continue operations. Once infrastructure has developed around mining operations, newer miners are then able to take advantage of the lower transportation costs and the greater availability of supplies than would exist in more remote areas.

4.2.3. Administrative dimensions

Mining has been formalized in Guyana, i.e. recognized by the state and governed by legal institutions, since the late 19th century when the British began to establish rules and

regulations (Lowe 2003). This very early formalization was aimed at seeking to control revenues while also preventing Guyanese from entering the mining sector – a move that would have threatened sugar plantations' labour pool (Clifford 2011). After 1886, when the first law outlined a process for licensed mining, a slew of Mining Ordinances and Acts followed, including the Principle Mining Ordinances of 1903, 1992, and 1931, and the Mining Acts of 1972 and 1989 (Lowe 2003).

The inheritance of this institutional structure and its accompanying culture has given Guyana arguably the most comprehensively formalized ASM[17] sector in the world (Hilson & Maconachie 2017). Overall, this relatively regularized picture is not only in stark contrast to the picture in many other countries; it is also very different from the picture in Guyana itself as recently as the 1980s. Indeed, during the tail-end of President Burnham's cooperative socialist experiment, the sector was allegedly rife with illegal mining and gold sales as a result of tight state controls on foreign currency retention and an artificially low buying price offered by the Gold Board. Once liberalization came in the early 1990s, gold declarations immediately rose, and along with it, the contribution of the sector to GDP (Bulkan 1998).

As recently as 2005, however, the IHRC (2007) estimated that although there were 1,500 registered dredges in Guyana, there may have been as many as 9,000 unregistered dredges operating, casting doubt over official accounts. While officials today acknowledge that there is *some* illegal activity in a vast landscape that is difficult to regulate, what data are made available nonetheless indicate that illegal operations (those that are cautioned or shut down each year) only represent around 10% of total operations (Interview 77).

4.2.3.1. Formal property titles

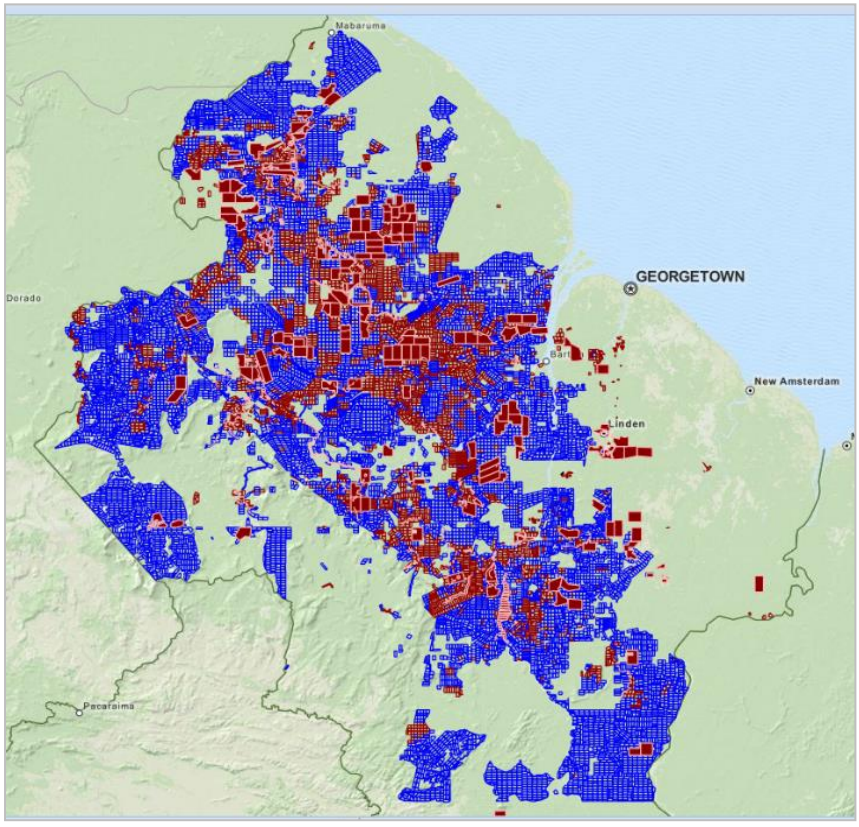
Although all subsurface minerals belong to the state, miners can rent land located within one of the state's six Mining Districts in order to extract the minerals in exchange for a tax and royalty[18]. According to the 1989 Mining Act, only Guyanese citizens can apply to mine – a deliberate move that has secured the sector a largely local and small-scale

[17] Although the term 'Artisanal and small-scale mining' (or, 'ASM') is used throughout this thesis, the term somewhat inapplicable in Guyana's case as the majority of mining in Guyana is mechanized. Indeed, the term used locally in Guyana is 'small and medium scale mining' (see discussion of this issue of 'scale' in ASM in Ashman (2014)).
[18] Mining Act Cap 65:01 s7.

character (Hilson & Laing 2017a; Hilson & Maconachie 2017). Although this accessibility is arguably being eroded today (as will be explored in Chapter 6), the legal structure has led to undeniable employment creation and other indirect economic benefits in Guyana – in contrast to other Latin American countries where the prioritization of large-scale mining in the development of mining laws and regulations has contributed to a corresponding lack of local benefits (Hentschel et al. 2002).

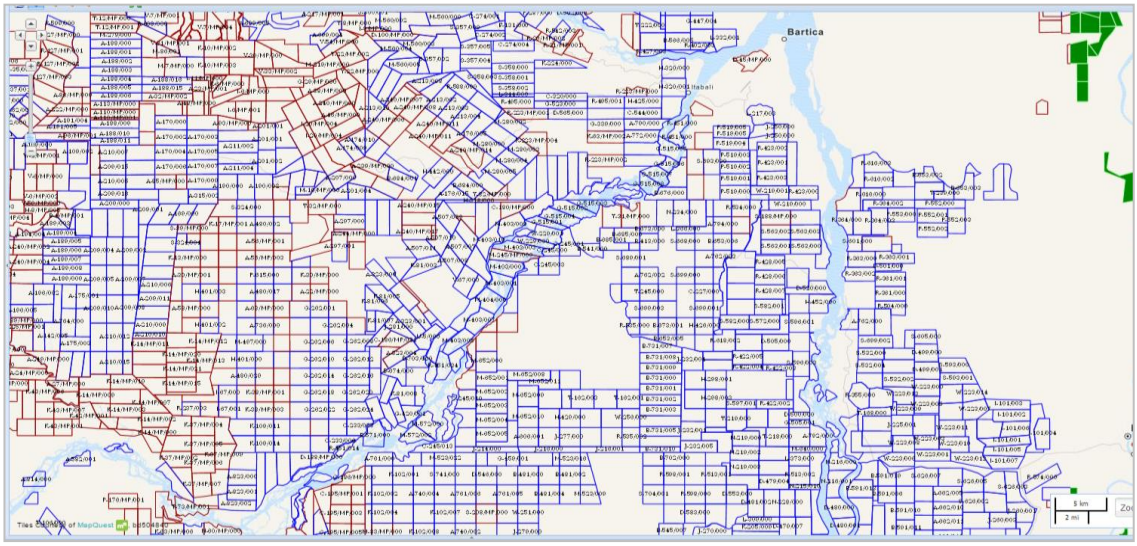
The scale of formal property occupation can be represented in Figures 4.4 and 4.5, with blue areas showing medium-scale prospecting permits (PPMS) which can only be prospected, and red areas showing medium-scale mining permits (MP) in which mining can legally take place. What is striking about these maps is that they not only show how large a swath of Guyana's land area has been locked up in mineral properties; they also illustrate the intensity of coverage – a reality whose social, economic, and environmental significance will reverberate throughout this thesis. The area south west of Bartica, in Figure 4.5, for example, could certainly be said to evoke Ferguson's (2007, p. 72) description of private titles as resembling "ordered gridlike spaces".

Figure 4.4: Medium-scale mineral property distribution in Guyana (2015)



Source: GIS layers adapted by author from GGMC Geoserver. Accessed at https://geoserver.ggmc.gov.gy/

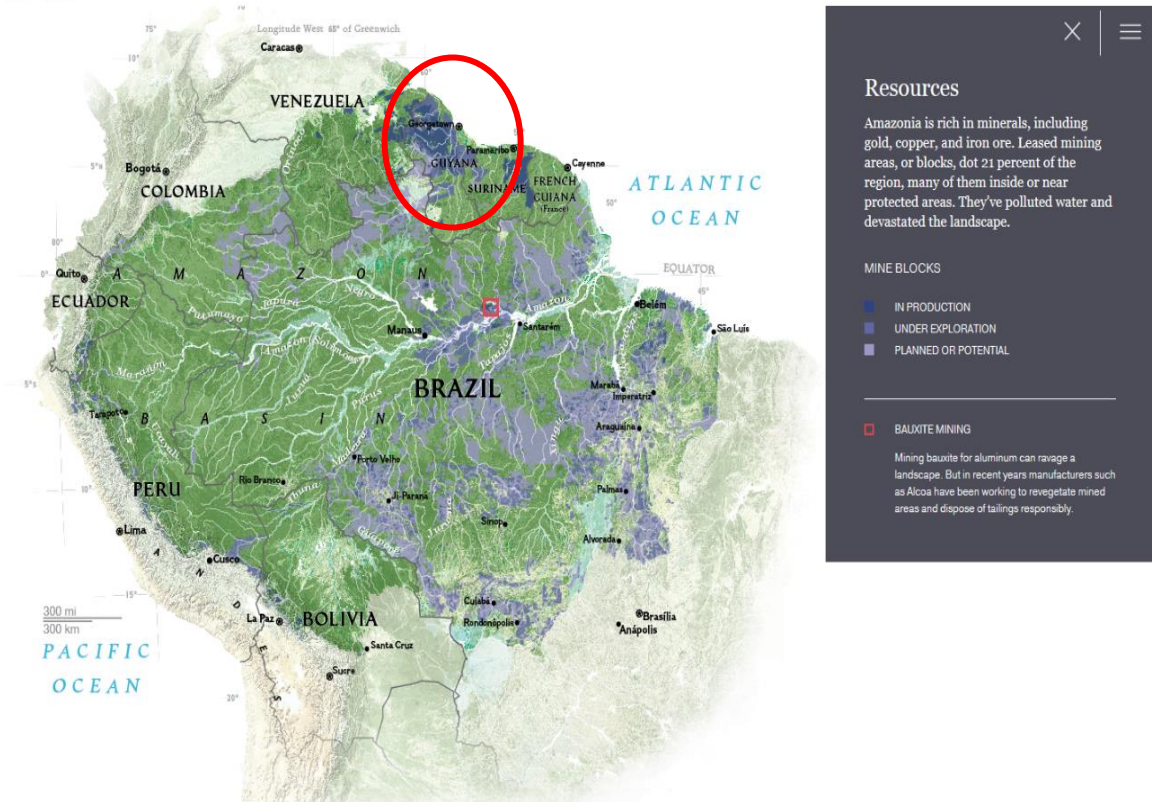
Figure 4.5: Medium-scale mineral property distribution west of Bartica (2015)



Source: GIS layers adapted by author from GGMC Geoserver. Accessed at https://geoserver.ggmc.gov.gy/

The combination of Guyana's formalized system and the expansion in demand for properties has meant that it has one of the highest formal mining sector occupations in the Amazon region, with most of the country covered in 'in production' mining blocks. This is illustrated in Figure 4.6, where Guyana has been circled in red.

Figure 4.6: Map showing formal mineral property coverage in the Amazon

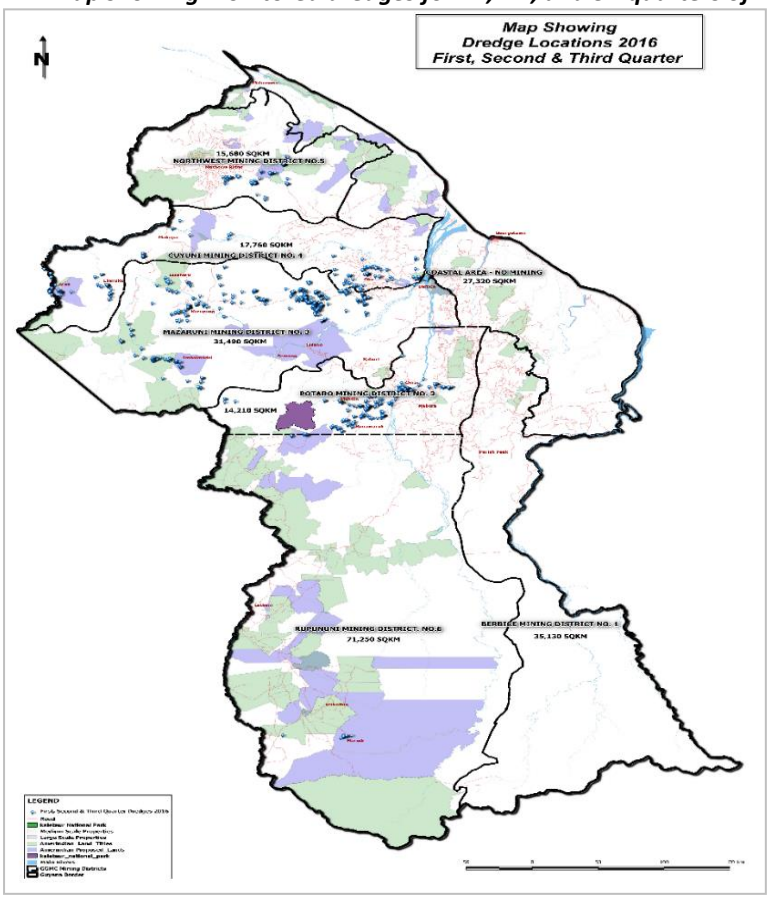


Source: Adapted by author from National Geographic

4.2.3.1.1. 'Live' operations

Although mineral property expansion appears comprehensive, dredging activity is not taking place in every single claim or block, with many devoid of licensed activity[19]. Indeed, although there were 23,570 claims and 3,773 MPs in 2015, this only corresponded to 3,349 licensed dredges. The number of 'live' operations will be winnowed down further when one considers that the total number of licensed dredges will not necessarily reflect the total number operating. Indeed, according to GGMC officers, for a range of reasons, as many as half of licensed dredges may end up being dormant, or 'parked', if a miner cannot raise the capital to finance an operation, or due to bad weather, for example (Interview 77). The number of 'live' operations is best captured by Figure 4.7, where the blue dots show *monitored* dredge activity for 2016.

Figure 4.7: Map showing monitored dredges for 1st, 2nd, and 3rd quarters of 2016



Source: GGMC

[19] Of course, this doesn't mean that illegal, unlicensed dredges couldn't be operating out of sight and knowledge of GGMC officers.

4.2.3.1.2. The official application process

Across all scales, accessing a property officially involves first applying for a prospecting permit, and then converting it to a mining permit. At the level of 'claims' – which are either parcels of land measuring 1500 x 800 feet (approximately 27 acres) on land or one-mile stretches of river – the process follows the original 19th century practice of identifying an area, paying the GY$1,000 (US$5) annual fee for the claim, marking the boundaries, and waiting 60 days for the GGMC to approve the claim[20]. After GGMC analysis, the prospective miner may have the claim verified to start mining or will be refused permission if it is found that the claimed area is already owned by someone else[21]. The low price of the claim application has both been celebrated by Hilson and Maconachie (2017) for its accessibility for poorer individuals and maligned by Bulkan and Palmer (2016) for its facilitation of the rapid colonization of the interior and the easy concentration of properties among a small elite of landowners. Both arguments will be explored in greater detail in further chapters.

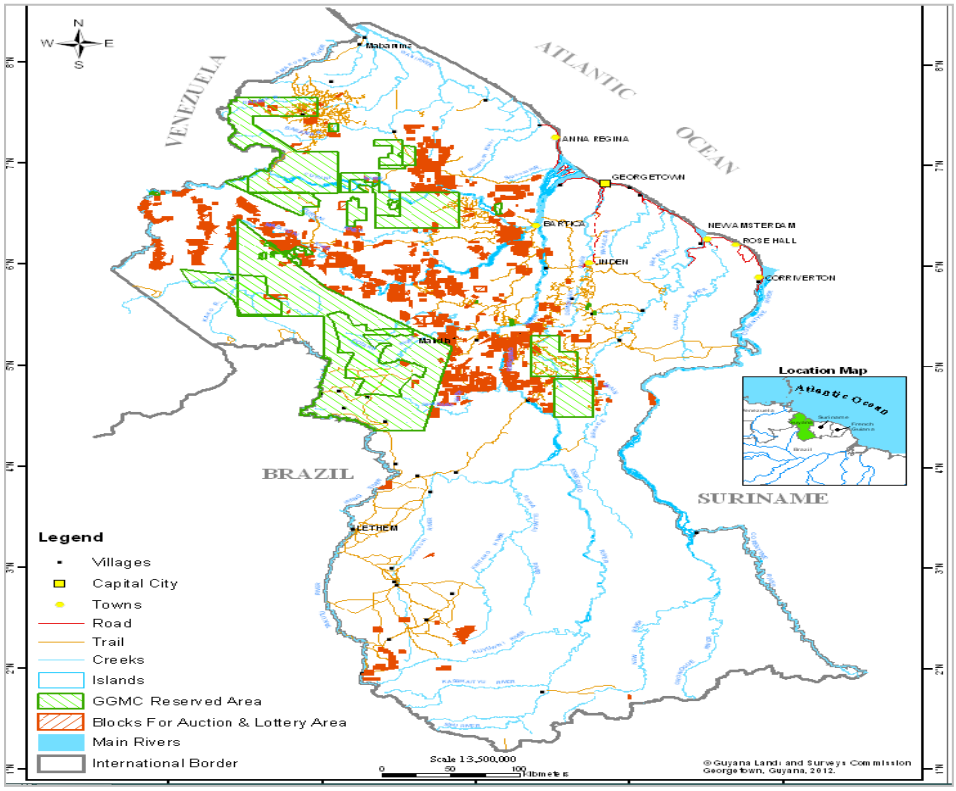
Medium-scale properties, whose boundaries are pre-determined (and whose area can be between 150 acres and 1,200 acres), are initially rented by the GGMC as PPMSs. While as PPMSs, the rental fee is US$0.25 per acre for the first year, rising by US$0.10 each year. During this phase, miners are required to carry out extensive prospecting on the land before permission is granted, a measure that is intended to minimize 'haphazard' mining based on guesswork that creates unnecessary environmental damage (IADB 2015). After the property is converted to a MP, the rental goes up to US$1 per acre per year. The time limit and sliding rental scale were designed to make it financially onerous for miners to hold onto land as PPMSs, thereby trying to stimulate 'beneficial' – as opposed to 'speculative' – occupation of land (Interview 87). However, in practice, the GGMC has not been strict in enforcing these fees, which has allowed miners to hold onto land for many years as PPMSs without being obliged to prospect (GGMC 2015).

[20] Regulations under the Mining Act 1989 s12.

[21] In practice, few miners wait the 60 days to begin mining, and most start work as soon as they have acquired the necessary finances to go to the workground. This often leads to conflict between those locating claims, issues that will be explored in Chapter 6.

In recent years, the release of medium-scale properties has become a rare event in the context of heightened land demand, leaving miners only able to access land through lotteries and auctions (IADB 2015). Lottery lands tend to be properties that have been given up by medium-scale property holders, invariably because they have been found to be barren (IADB 2015). Although entry fees are relatively low – only around US$350 – the available land is often remote and ultimately barren. Auction lands, on the other hand, tend to have better mineral-bearing prospects, and, as such, have bidding prices that are beyond the means of smaller miners. Figure 4.8 shows blocks identified for auctions and lotteries.

Figure 4.8: Map showing GGMC areas reserved for Auctions and Lotteries



Source: GGMC

Unable to access land through these official routes, miners have increasingly been pushed into 'getting a position' on another person's land. In response to miners' claims of difficulties in getting a position, the GGMC introduced a syndicate route in 2016, according to which groups of miners of fifteen and more can apply direct to the GGMC

for blocks that will be made available from the GGMC's Closed Areas[22] (Stabroek News 2017g). These developments will also be looked at in more detail in Chapter 6.

4.2.3.2. Regularization requirements

In addition to applying for a mineral property, the miner is obliged to pay GY$1,000 (US$5) to register each dredge, GY$1,000 to register each engine, GY$1,000 to register an excavator or piece of earth-moving equipment, GY$1,000 to register each worker, and GY$100,000 for an environmental bond[23]. Although medium-scale property holders are not required to provide an Environmental and Social Impact Assessment (ESIA), they are required to provide the GGMC with an Environmental Management Agreement, which covers 14 areas, such as tailings management and mercury usage. They must also have a closure plan, and a contingency and emergency response plan.

While actively mining, the miner is obliged to keep an up-to-date production book, recording the amount of gold produced per wash-down. The miner is required to pay 5% royalty on the gold sold to the gold board as well as a 2% tax to the government – a level that is considerably lower than the 40% tax that other businesses pay. Although the paperwork requirements are laborious, they are also inexpensive relative to the gold revenue derived from the mechanized production system (Hilson & Maconachie 2017). However, this scenario was due to change in 2018, with state-sanctioned institutional and regulatory measures set to become more financially and logistically onerous for smaller producers in the sector (Kaieteur News 2017a). These measures and their implications will also be explored in more detail in Chapter 6.

4.2.3.3. Laws, codes, and governance

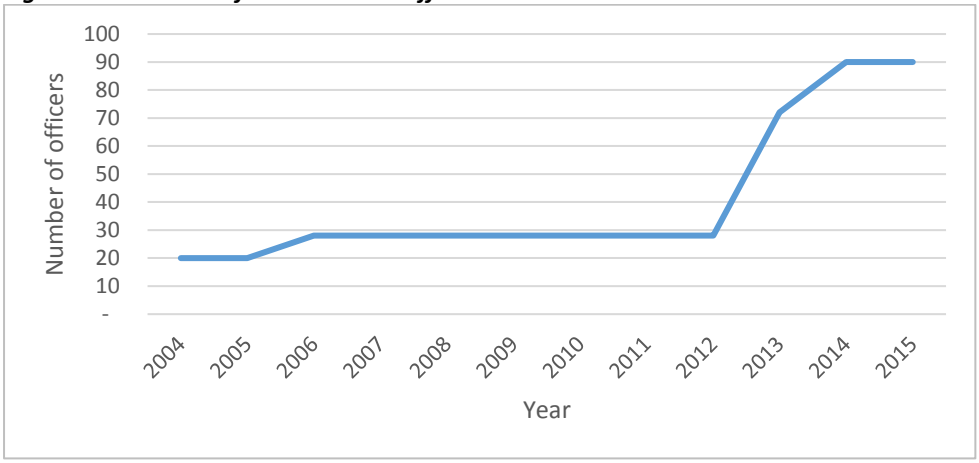
Once mining commences, a comprehensive set of rules and regulations governs activity, specifying everything from the inspection requirements for tailings dams[24], the types of safety equipment required when handling mercury[25], the minimum distance mining is

[22] Closed Areas comprise formerly-abandoned or cancelled properties that are held in reserve by the GGMC. A Closed Areas Committee was established in 1994 to advise the Minister on the apportionment of these released areas among the different scales of mining, though it was effectively defunct between 2005 and 2014, replaced by Ministerial discretion (Kaieteur News 2014). When revived in 2014, the Committee was chaired by the Chair of the GGMC Board, an individual later implicated in acquiring mining concessions through insider trading.
[23] Mining (Amendment) Regulations No 3 of 2005 s226.
[24] Mining (Amendment) Regulations No 3 of 2005 r245.
[25] Mining (Amendment) Regulations No 3 of 2005 r127.

allowed to take place from the low water mark of a river bank[26], and the percentage of gold required to be paid to Amerindian village councils if mining is taking place on their land[27]. These rules are embodied not only in specific mining laws and regulations, but also across related laws, such as the Amerindian Act and the Protected Areas Act. Miners transgressing any of these rules risk being fined or having equipment confiscated. The evolution of these regulations in relation to specific discourses and waves of reform in Guyana will be examined in more detail in Chapter 5.

The GGMC, established in 1976, is tasked with enforcing all rules and regulations. However, as will be explored in subsequent chapters, there are logistical, political, and socio-economic reasons why the regulator struggles to fulfil this role. Logistically, despite institutional strengthening in recent years as a result of increased attention on the sector in the context of REDD+ policy development, the numbers do not work in their favour. At the time of writing, 90 officers were tasked with monitoring more than 3,000 licensed dredges across an area of 83,000 square miles, as illustrated in Figure 4.9. However, none of these officers are permanently based 'in the field' at mining stations but are sent out for monitoring trips several times a year.

Figure 4.9: Number of GGMC Mines Officers



Source: Adapted by author from GGMC Annual reports

Further threatening effective enforcement is the sector's ubiquitous association with corruption, illegality and discretionary practices (Clifford 2011; Bulkan 2014). Poor enforcement has been attributed to bribes regularly being paid to poorly-remunerated staff

[26] Mining (Amendment) Regulations No 3 of 2005 r251
[27] Amerindian Act 2006 Cap 29:01 s51 (1).

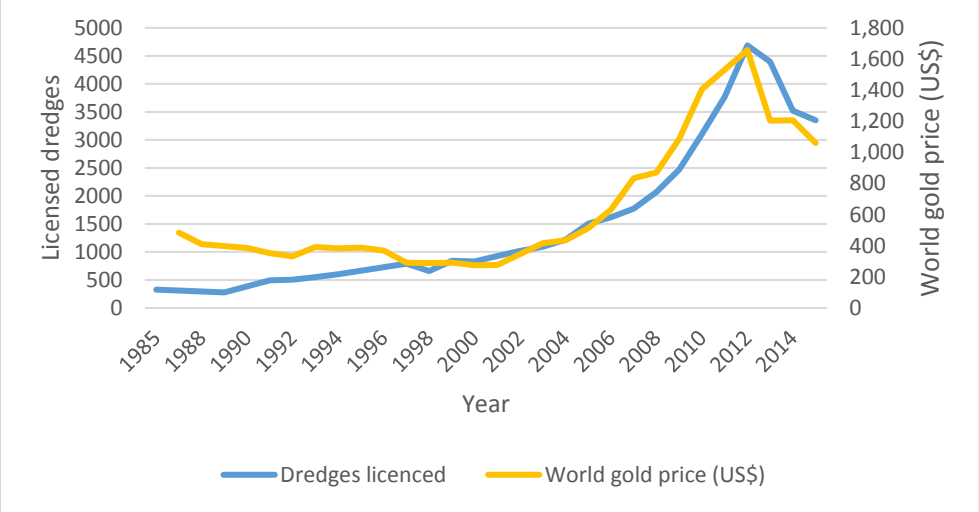
in return for overlooking illegal activity (IHRC 2007). The link between the sector and criminal networks was meanwhile illustrated in 2016 when the Federal Bureau of Investigation (FBI) claimed that more than half of Guyana's gold was being smuggled out through Brazil, Suriname, Europe, and Canada by a high-level smuggling network that had ties with top-ranking politicians (INews Guyana 2016a).

4.3. Spatial and temporal trends

4.3.1. Expansion in mining investment

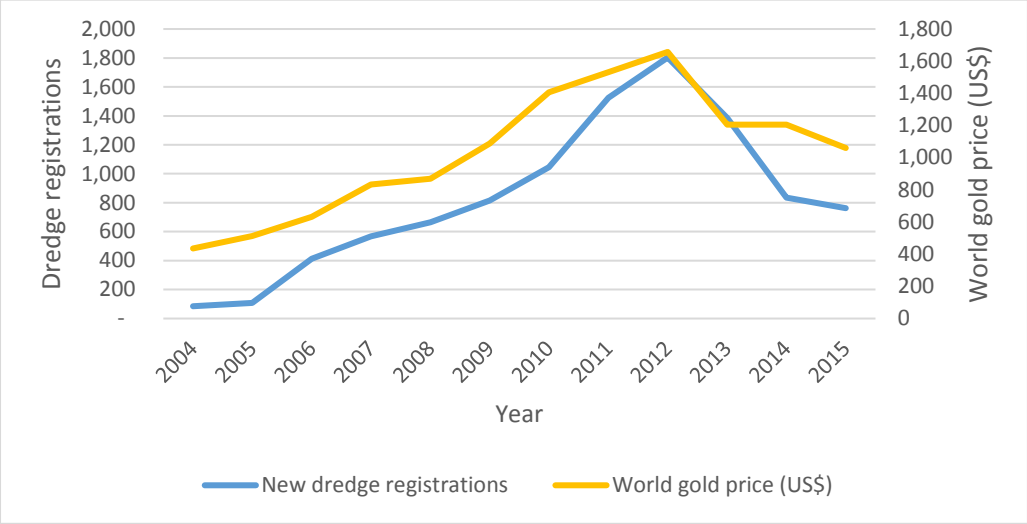
The scale of the mechanized, (largely) regularized mining activity described in Section 4.2 expanded gradually since the mid-1990s, and rapidly since the mid-2000s, as illustrated in Figures 4.10 and 4.11. Indeed, while in 1987, there were just 327 dredges licensed to operate in Guyana, by 2006 the number had risen to 1,617, and by 2012 had reached 4,868, before falling back to 3,060 by the end of 2016. As with all trends in this section, these patterns were closely related to the world gold price, which explains the growing interest in the environmental impacts of gold mining from the late 2000s.

Figure 4.10: Number of dredges licensed vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

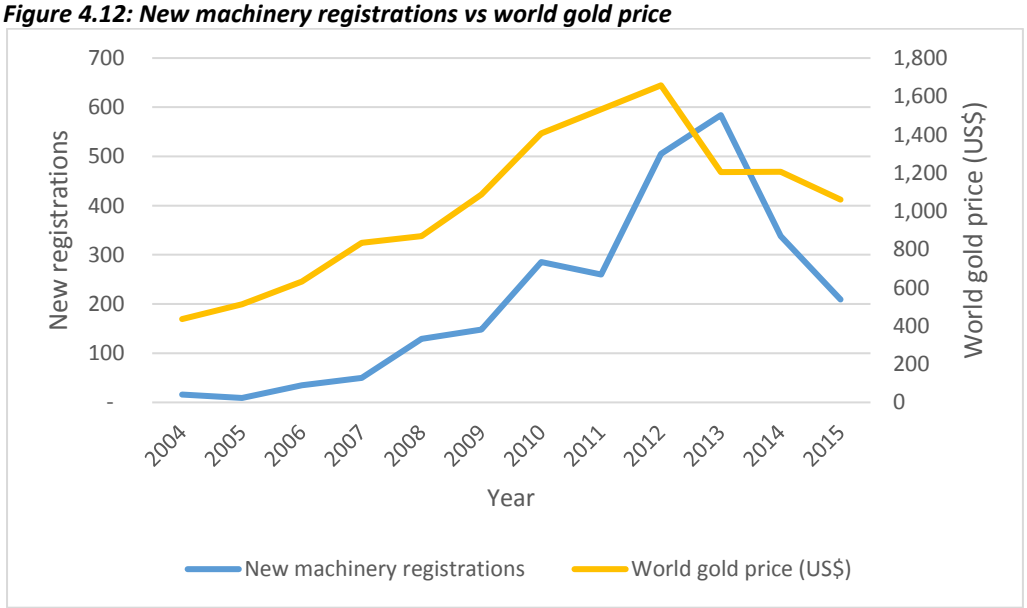
Figure 4.11: New dredge registrations vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

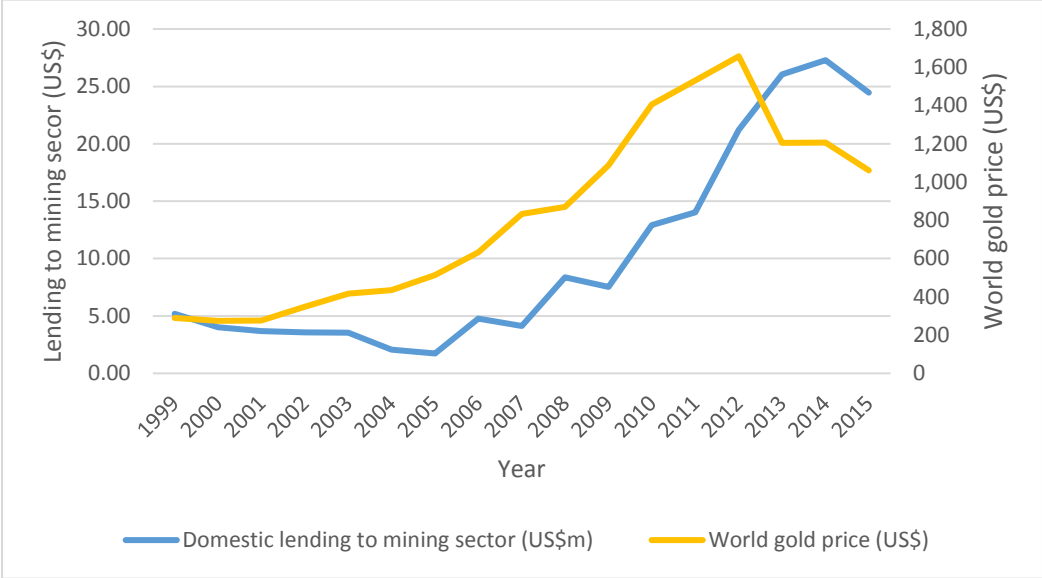
In addition to the increase in dredge numbers – and reflecting the increasing move to more 'medium-scale' style mining (a move driven by both miners' greater capitalization and the deepening of deposits) – there was also an increase in licensed machinery, such as excavators and bulldozers, as can be seen in Figure 4.12. The growth in the sector was also supported by growing domestic lending to larger mining and equipment companies, which are considered less of a risk than in earlier times – as per Figure 4.13.

Figure 4.12: New machinery registrations vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

Figure 4.13: Domestic lending to mining sector vs world gold price



Source: Adapted by author from Bank of Guyana and kitco.com

The cumulative effect of these trends on production was significant and is illustrated in Figure 4.14. A record 690,000 oz. was produced in 2016 (an increase of 237% over 2006), worth around US$860 million (Guyana Bureau of Statistics 2017). This amount surpassed even the annual declarations that Guyana saw during the 1990s and 2000s when Omai was operating, and three-quarters of this total was attributed to the small and medium-scale sector (Guyana Chronicle 2016b).

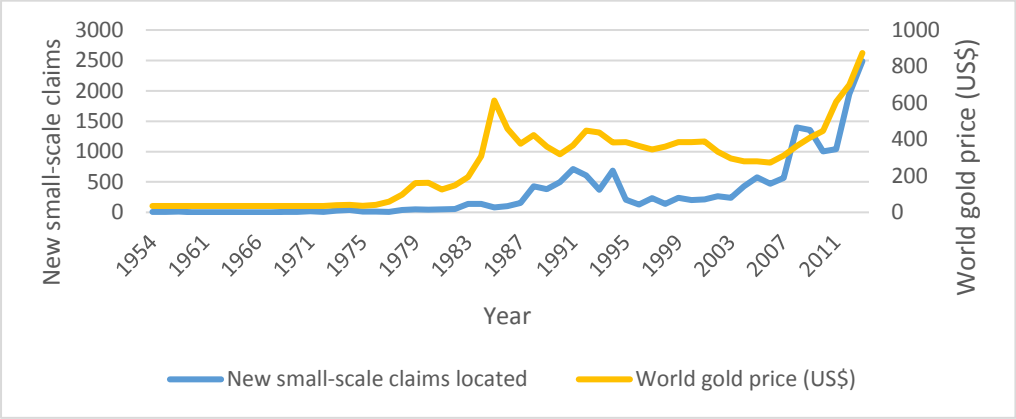
Figure 4.14: Gold production vs world gold price

Source: Adapted by author from GGMC and kitco.com

4.3.2. Expansion in property investment

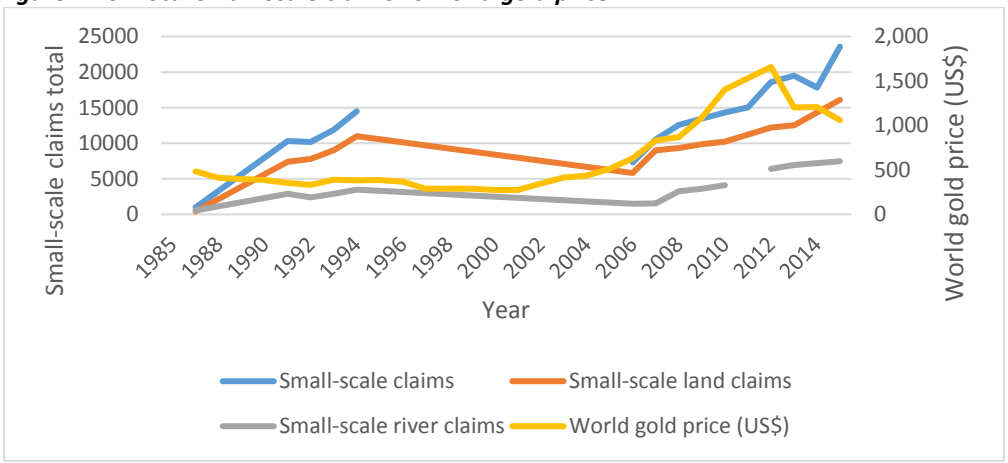
While the number of licensed dredges increased by 924% between 1987 and 2015 (from 327 to 3,349), this expansion was far outstripped by the expansion in property demand. The number of small-scale claims increased during the same period by 4,312%, from 426 to 23,759 (a number that included 16,100 land and 7,470 river claims). The number of medium-scale mining permits meanwhile increased by 1,768% from 202 in 1992 to 3,773 in 2015, and the number of medium-scale prospecting permits increased by 528% from 1,600 in 1994 to 10,049 in 2015. These trends are illustrated in Figures 4.15 to 4.18[28].

Figure 4.15: New small-scale claims located by year vs world gold price



Source: Adapted by author from GGMC document listing total claims in existence as of end of 2014 and their dates of application; and kitco.com. GGMC data accessed at http://ggmc.gov.gy/main/sites/default/files/Documents/ExistingClaims2014.pdf

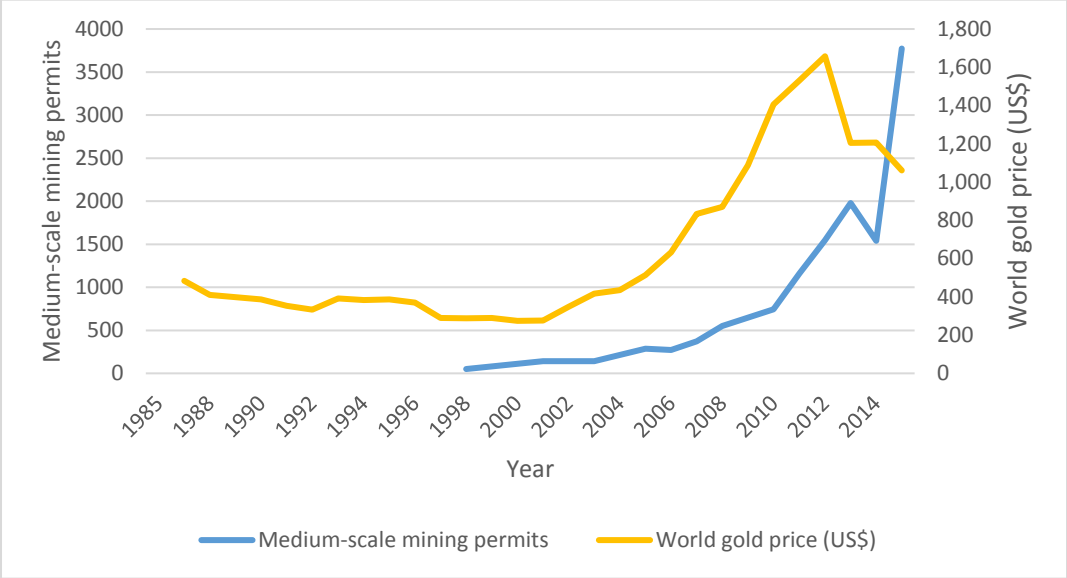
Figure 4.16: Total small-scale claims vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

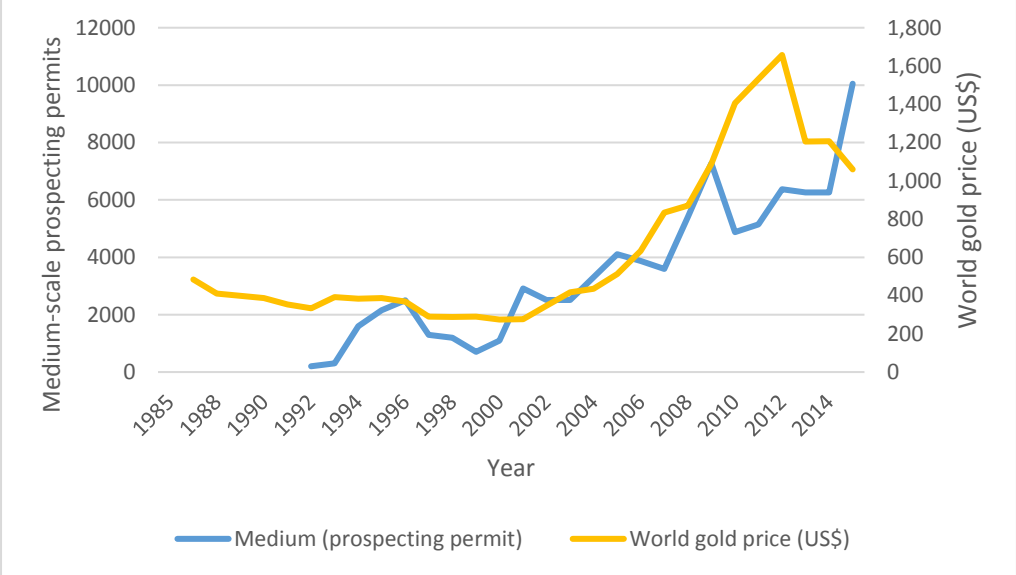
[28] Note how the requirement in medium-scale mining to first hold a property as a PPMS before it can be converted to an MP creates a time-lag between the gold price change and the corresponding effect in demand for MPs.

Figure 4.17: Medium-scale mining permits vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

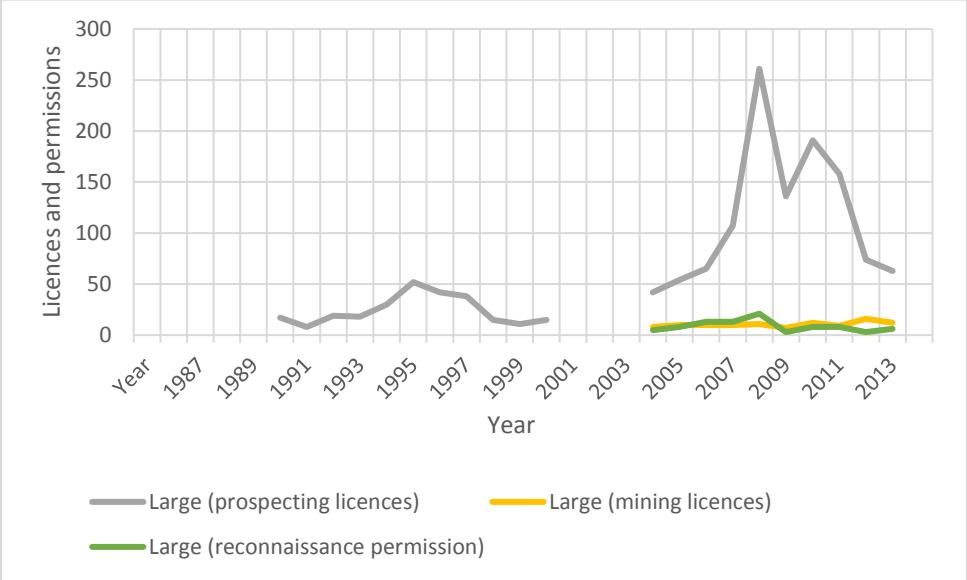
Figure 4.18: Medium-scale prospecting permits vs world gold price



Source: Adapted by author from GGMC Annual reports and kitco.com

Although this thesis is concerned with small and medium-scale mining, it is worth noting that large-scale prospecting activity also expanded after Omai left in 2005, as illustrated in Figure 4.19. Although few of the prospecting licences have been converted to actual mining licences, two of the companies who received licences, Guyana Goldfields and Troy Resources, contributed around a quarter of all gold declarations in Guyana in 2016 (Guyana Chronicle 2016b).

Figure 4.19: Large-scale mining licences and permissions



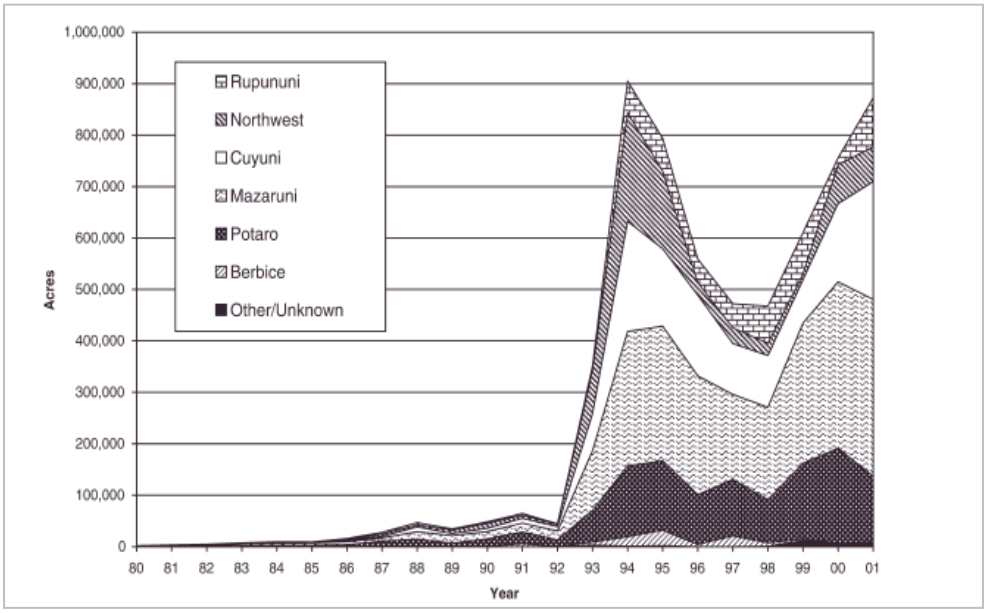
Source: Adapted by author from GGMC Annual reports

4.3.2.1. Contextualizing the expansion in mining and land demand

4.3.2.1.1. Institutional changes

Bridge (2002) has shown that mining land demand increased rapidly following the introduction of the new liberalized framework for mining embodied in the Mining Act in 1989, and the wider liberalization of the economy that began in the 1980s. The Act created a new category of 'medium-scale' and 'large' properties, and there was an immediate surge in interest in the category, which came into existence in 1992 (Bridge 2002). Lowe (2003) reports, for example, that there were 202 applications in 1992, and 943 by 1993 – an increase that appears unrelated to world gold prices. The liberalization of the selling of gold in 1994 under the Guyana Gold Board (Amendment) Act is also credited with catalysing participation in the sector by creating a wealth of new opportunities for profit and speculation in the sector (Bulkan & Palmer 2016). Figure 4.20 illustrates that the area of land being used for mining accordingly increased from around 50,000 acres in the late 1980s to almost a million acres by the early 2000s.

Figure 4.20: Expansion in mining sector acreage 1980-1991

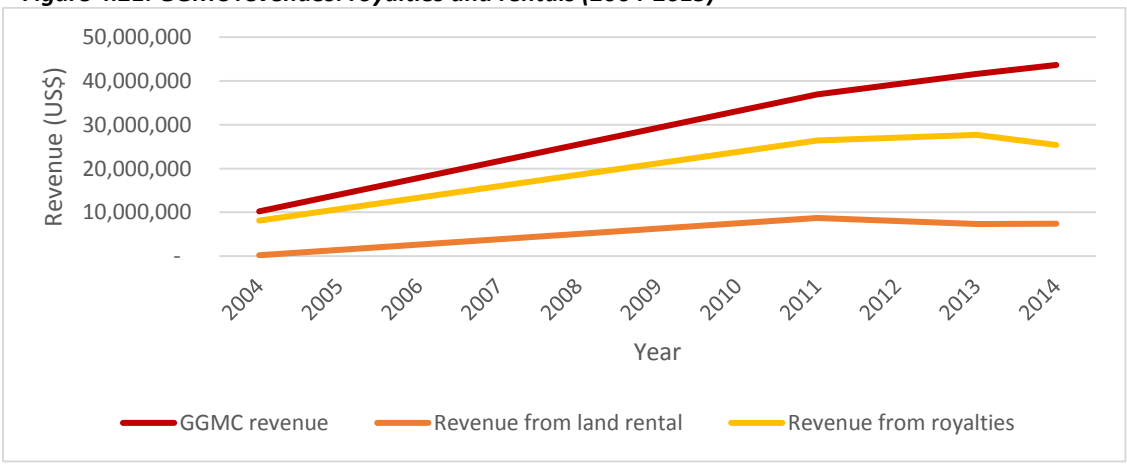


Source: Bridge (2002)

4.3.2.1.2. Gold prices and cheaper technology

While these institutional changes clearly had a significant effect on land demand, the magnitude of expansion pails into insignificance against the subsequent land demand growth that was seen from the mid-to-late-2000s. Indeed, following rapid gold price increases from 2008 onwards, thousands of new people flocked from the coast (and from agricultural employment) into the mining sector, aided by the increasing availability of cheaper, imported machinery (Hilson & Laing 2017a). Bulkan and Palmer (2016) suggest that, as expanded land rentals financially benefitted the GGMC, it did little to reign it in, as can be seen from the steady rises in GGMC revenues in Figure 4.21.

Figure 4.21: GGMC revenues: royalties and rentals (2004-2015)

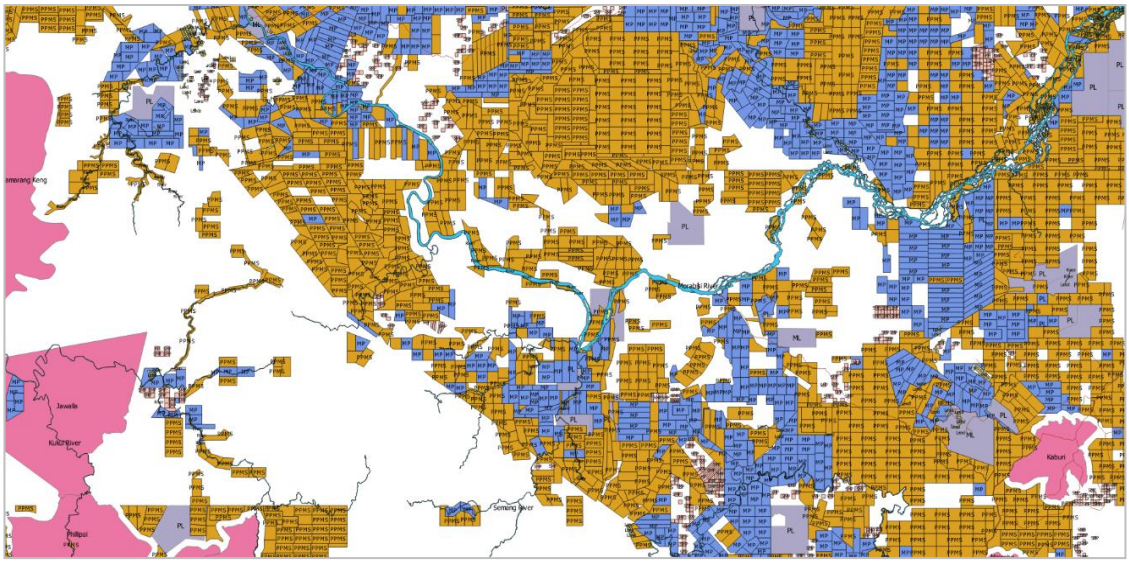


Source: Adapted by author from GGMC Annual reports and Mineral Reviews

4.3.2.1.3. Land speculation

In addition to institutional changes and rising prices, an increasingly popular explanation for land demand is linked to its speculative value, with many wealthy miners and businesspeople traditionally unconnected to the mining sector reportedly acquiring land in the hope that it may become coveted by domestic and foreign investors (Thomas 2009). Bridge (2002, p. 381) shows that during the 1990s, for example, "holders of mineral rights could be paid between US$3,000 and US$4,000 per permit for their role in putting up the land as part of a joint venture, with royalty agreements capable of earning the holders' tens of thousands or even hundreds of thousands of US dollars per year." This 'speculation thesis' appears supported by Figure 4.22, which shows how the majority of medium-scale properties in Potaro Mining District are being held as PPMSs (in yellow) and have not yet been converted to MPs (in blue).

Figure 4.22: Map showing the distribution of MPs and PPMSs in the Potaro area



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

Other reasons suggested by interviewees for rising land demand relate to the impulse by local investors to 'lock up' land in anticipation of an imminent heightened demand for (and value of) land as a result of potential REDD+ investments – as well as the fear that future mining lands may become unavailable if Amerindian communities continued their land extension applications, a process that became formalized in the 2006 Amerindian Act (Interview 5).

4.4. Conflict and contention

Spatially, the expansion in land demand has seen an increase in small and medium-scale mineral property coverage from 11,736 acres (or 0.02% of Guyana's total land area) in 1987 to 10.5 million acres (or 20% of Guyana's total area) by 2015. As of the time of writing in 2018, the mining sector was occupying around half of Guyana's total land area. Figures 4.23 to 4.26 illustrate the growing occupation of Guyana's land area by mineral properties since the late 1990s – where the properties that existed in the selected year are shaded in colour, with the orange blocks representing medium-scale properties. As well as raising awareness of gold mining's negative environmental impacts, the heightened demand for mining land from the mid-2000s has sharpened competition within – and between – mining and other land uses. It has also drawn attention to the highly inequitable tenure structure that has accompanied these rises in mineral property demand.

Figure 4.23: Mineral property distribution in 1999

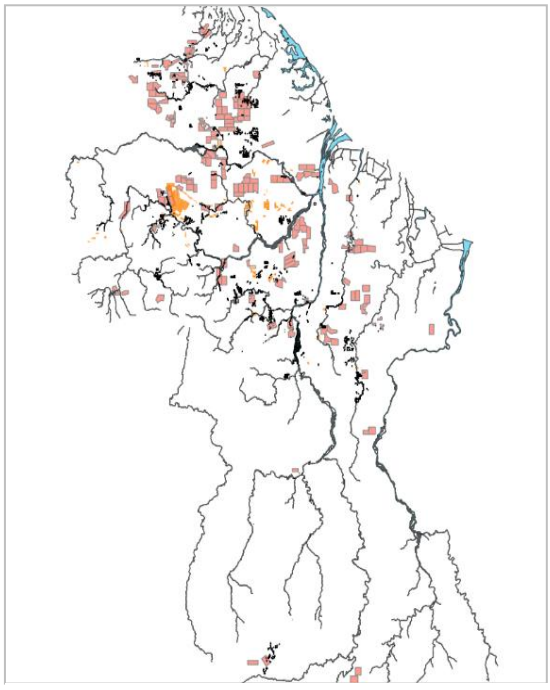
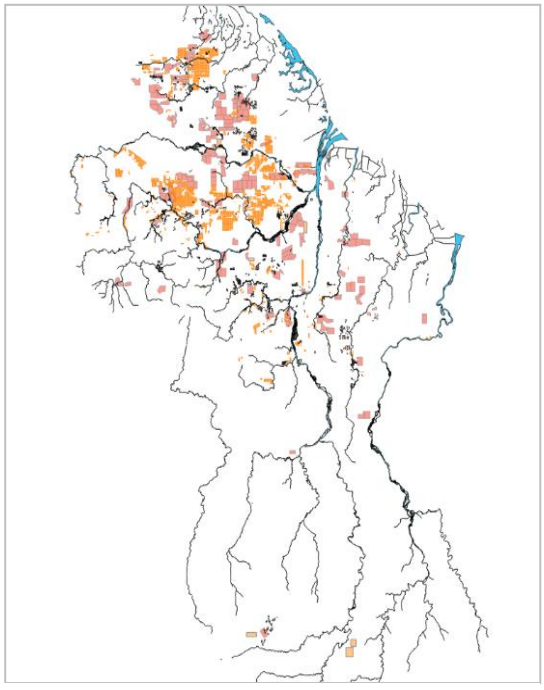


Figure 4.24: Mineral property distribution in 2005



Source: Adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

Figure 4.25: Mineral property distribution in 2010

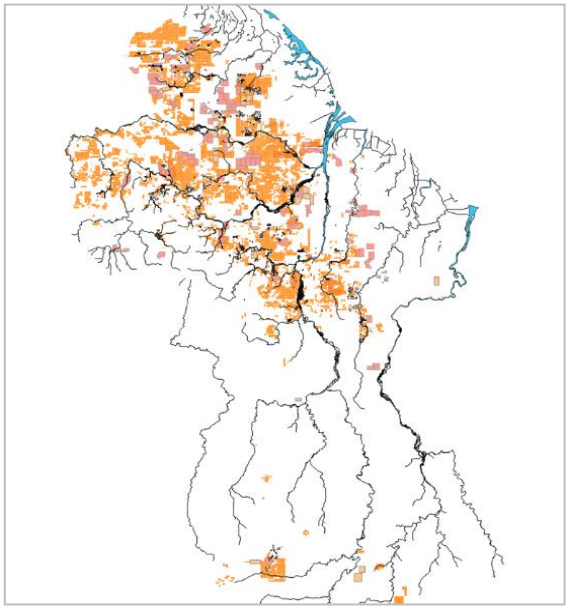
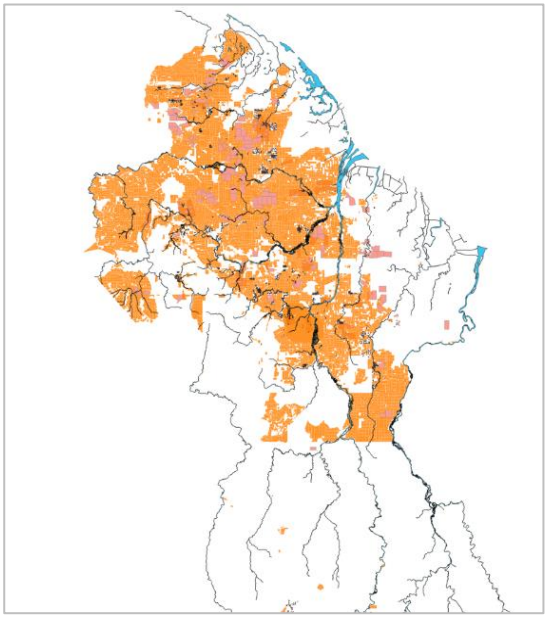


Figure 4.26: Mineral property distribution in 2015



Source: Adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

4.4.1. Mining and environmental impacts

4.4.1.1. Deforestation and forest degradation

The location of minerals under the subsurface means that forests inevitably have to be cleared for miners to be able to open up a new mine in an as-yet unmined area (known as 'maiden' land). Although miners will frequently return to already-mined sites equipped with newer technology in the hope of extracting gold from 'tailings' material, the wider availability of powerful earth-moving equipment makes the process of opening up new areas increasingly easy. The absence of accurate prospecting information however means that there are still no guarantees that the new area will yield any gold (IADB 2015).

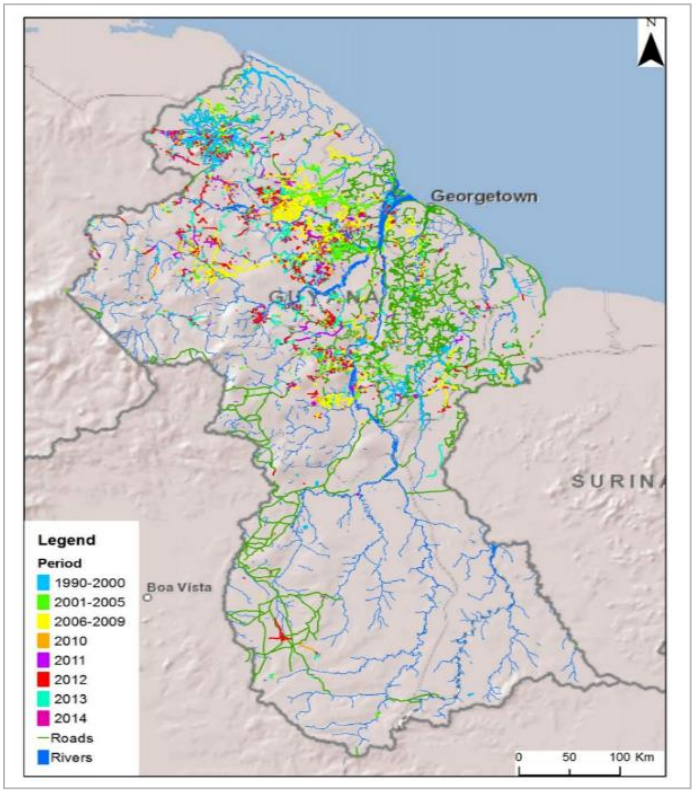
The negative impacts of deforestation have been well-established. According to Conservation International (2009, p. 7):

> …the loss of forest cover not only contributes to the release of carbon dioxide into the atmosphere, exacerbating global warming, it also has significant negative effects on soil quality, biodiversity, local livelihoods, and indigenous communities

Although data is scarce before 1990, Guyana's participation in the REDD+ programme has meant that its capacity to monitor deforestation has rapidly improved since the late

2000s, with a range of quantitative and spatial data now available. Such data have been used to create time series maps on forest change, as in the GFC map in Figure 4.27. The coloured spots clearly ally with data on the known locations of gold deposits and dredging activity, suggesting that deforestation indeed increased after 2010.

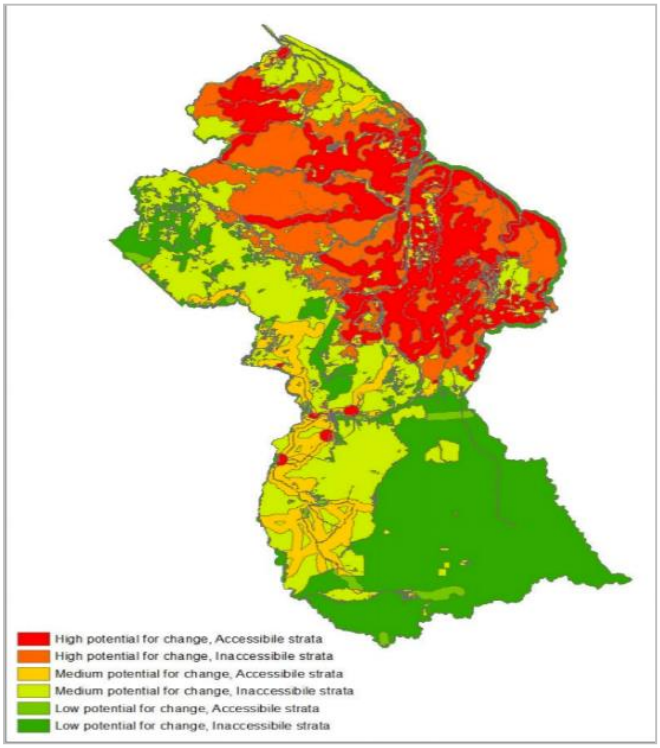
Figure 4.27: Deforestation 'hot spot' map of Guyana



Source: MNRE

Similarly, based on an analysis of risks, Figure 4.28, from the same GFC report, shows the forested areas most threatened by mining activity.

Figure 4.28: Potential areas threatened by deforestation in Guyana



Source: GFC

Further quantitative data, displayed in Table 4.1, directly links rises in deforestation to extractive activities, principally gold mining. While forest loss during the 1990s, averaged 0.01% per year between 1990 and 2000 (an annual loss of 2,217 ha), by 2010, annual forest loss jumped to 0.06%, with 91% of all recorded annual deforestation attributed to small-scale gold mining. After 2012, the rate dropped to 0.05% for 2015-16, with the contribution from mining also dropping to 74%. Figure 4.29 illustrates the extent to which the world gold price and forest loss have dovetailed over the past 20 years in Guyana.

Table: 4.1: Annualised rate of forest change by driver from 1990 to 2016

Change Period	Change Period (years)	% Annual contribution to deforestation				Annualized Rate of Change (ha)	Annual % change	Global deforestation rate (FAO)
		Forestry	Agriculture	Mining	Other			
1990-2000	10	28.63	9.54	50.96	10	2,127	0.01	0.18
2001-2005	5	24.58	8.32	62.60	5	6,850	0.04	0.08
2006-2009	4.8	24.66	9.26	65.08	1	4,084	0.02	
2009-10	1	2.86	4.99	91.22	1	10,287	0.056	
2010-11	1.25	2.35	0.52	92.77	4.5	7,912	0.054	
2012	1	1.64	3.00	93.24	2.1	14,655	0.079	
2013	1	2.59	3.33	90.46	23.5	12,733	0.068	
2014	1	1.70	6.82	85.10	4.5	11,975	0.065	
2015-16	2	3	4	74	19	9,208	0.050	

Source: Adapted by author from GFC

Figure 4.29: Gold price vs deforestation

Source: kitco.com and GFC

Despite the apparent definitiveness of the relationship suggested by the aforementioned quantitative data (and illustrated by photographic evidence such as Image 4.10), there is still much discursive contestation around the issue in Guyana today – as will be explored throughout this thesis.

Image 4.10: Mining impacts around Mahdia

Source: Demerara Waves. Accessed at www.caribnewsdesk.com

4.4.1.2. River destruction and disruption

The release of overburden material and waste water into streams and rivers pollutes the water, having effects on livelihood and domestic uses of those resources (Thomas 2009). Amerindians in particular complain about the effects of turbidity on their fishing activities, as per Image 4.11 (Colchester et al. 2002). Such occurrences are supposed to be prevented by miners preparing tailings ponds and dams, but there are frequent lapses in practice (IADB 2017).

Image 4.11 Turbidity caused by tailings run-off from a mining operation

Source: Author

The use of *dragas* or river dredges destroys river banks (as seen in Image 4.12), causing turbidity and disrupting fish stocks. It also disrupts the topography of the land and can divert creeks, sometimes having detrimental impacts for indigenous communities where their titles are derived from natural boundaries such as creeks and river banks.

Image 4.12: River bank degradation caused by a draga

Source: Author

The depositing of waste water or tailings material into rivers or creeks can also lead to sediment build-up which can block navigable channels, and in some cases re-direct the flow of the water (IADB 2017).

4.4.1.3. Mercury pollution

Mercury pollution is considered one of the greatest impacts of ASM, with the sector thought to be responsible for as much as a third (or around 727 tonnes) of total annual global anthropogenic mercury pollution (UNEP 2013). Although it is decreasingly used in the mining pit itself in Guyana, the majority of miners use mercury in the final process of separating the gold from the sandy contents of the sluice box – typically with bare hands, as can be seen in Image 4.13 (IADB 2015). Once this material is isolated, miners typically use a blowtorch to burn away the amalgam to leave the raw gold (Hilson & Vieira 2007). As well as exposing their skin to contact with mercury (as the majority do not wear gloves or other protection), miners also expose themselves to mercury vapours in the process of burning the mercury, as few use retorts or respirators. As mercury often gets spilled or runs off in tailings material, traces of it end up in rivers and creeks, where it is ingested by fish and other animals which, in turn, are ingested by humans who consume this protein source (Childress 2010). Mercury burned in the air also dissolves and falls on trees, vegetation, and soil.

Image 4.13: A miner mixes mercury in with the gold-bearing material

Source: Author

The very small number of prior studies conducted in Guyana on the impact of mercury on the health of proximate communities have not however proved conclusive. For example, Singh et al. (2001) found that 89% of the people tested at Isseneru village (a popular Amerindian mining community) had levels of mercury that exceeded levels the World Health Organization (WHO) considered safe, while at Kurupung, where predominantly diamonds are mined, only 12% exceeded this level. Barnes (2000) found that 50% of Akawaio tested had 14 ppm (or three times WHO safe standards). Howard et al. (2010) meanwhile conducted studies of comparative water quality in two mining areas, Mahdia and Arakaka, and two conservation areas, Iwokrama and Konashen, finding that the conservation areas had higher mercury loadings than the uncontaminated baseline – perhaps a result of mercury entering Guyana alluvially from Brazil.

4.4.1.4. Vector diseases

Finally, the failure of miners to 'back-fill' and re-contour mines prior to leaving an area can lead to the creation of permanent pools of stagnant water, as illustrated in Image 4.14 (IADB 2015). These can become magnets for mosquitoes – a major cause of malaria and other insect-borne diseases, such as Dengue fever and Zika – which can affect local populations, especially from Amerindian villages (IHRC 2007).

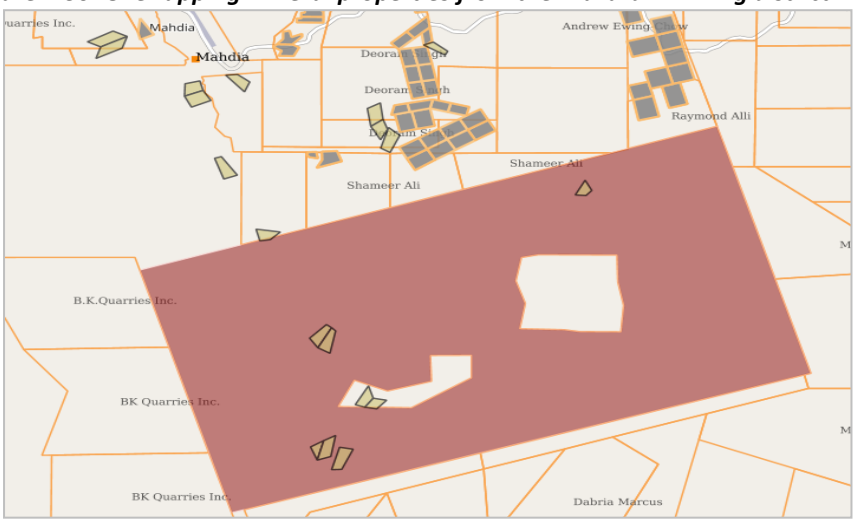
Image 4.14: Degraded former mining areas near Mahdia

Source: Author

4.4.2. Clashes between different types of properties

The demand for land has introduced new – and inflamed pre-existing – low-intensity conflict of over land and resources in Guyana. In Figure 4.30, for example, small-scale claims (in yellow) exist 'within' later-arriving large-scale properties (shaded in red). Claims and special mining permits (in grey) are also within medium-scale properties (the orange grid lines). When gold is found within these 'properties within properties', conflict can arise, with the economically and politically weaker actor often losing out, despite having a legitimate and prior claim on the land and the resources therein.

Figure 4.30: Overlapping mineral properties from the Mazaruni mining district



Source: Adapted by author from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

Additionally, as around 15% of Guyana's total land area comprises Amerindian village land (as illustrated in Figure 4.31), and as most indigenous village lands (shaded below pink) are surrounded by mining properties (in orange) (as illustrated in Figure 4.32), this proximity is a source of tension that will be looked at in more detail in Chapters 7 and 8.

Figure 4.31: Titled Amerindian villages

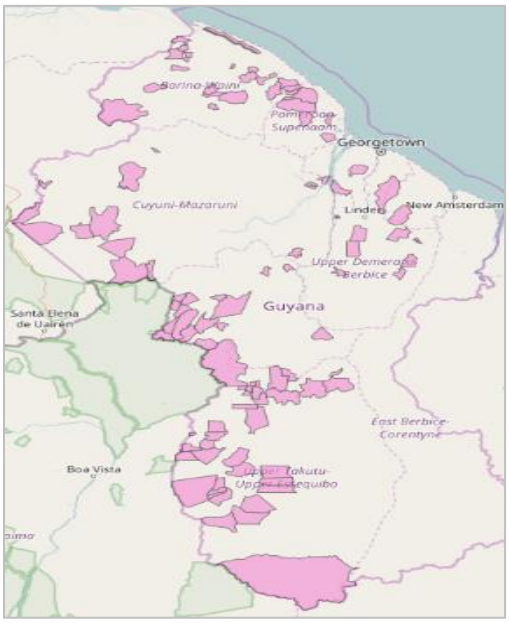
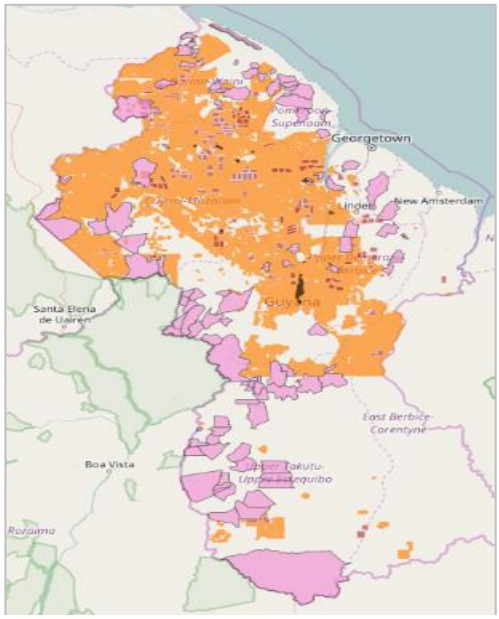


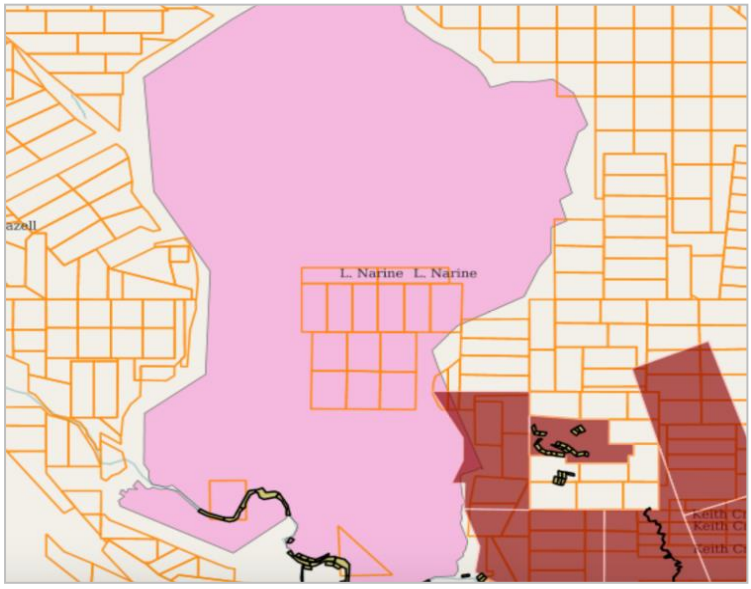
Figure 4.32: Titled villages and mineral properties



Source: Adapted by author from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

A close-up view of Isseneru village (shaded in pink) in Figure 4.33 also shows how mineral properties can 'overlap' with Amerindian village land. Such a scenario has seen the village of Isseneru take several miners to court in order to challenge the existence of mineral rights within its title (Kaieteur News 2013d). Due to the existence of the 'save and except' clause in all Amerindian villages' Absolute Grants (the official village title document) – an aspect that will be looked at in detail in subsequent chapters – the village lost its case, and the mineral properties stood (Kaieteur News 2013a).

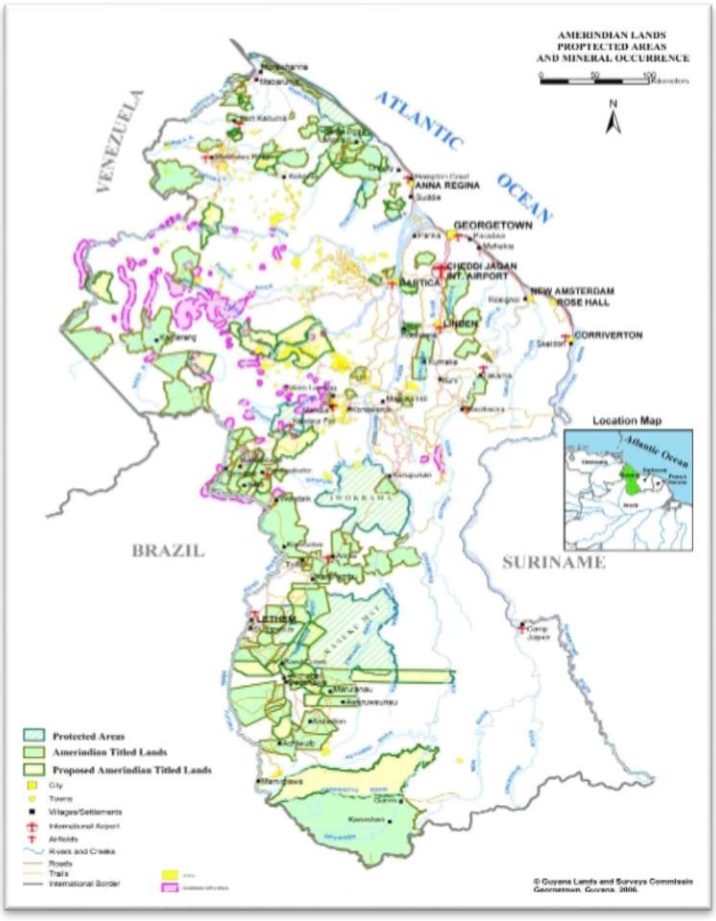
Figure 4.33: Overlaps between Isseneru village and mineral properties



Source: Adapted by author from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

Clashes and apparent 'overlaps' between Amerindian properties and mineral properties are made even more complex by the additional *proposed* Amerindian land titles, shown in Figure 4.34 in yellow. In several cases, including in Kangaruma-Tasserene, the focus of Chapter 8, mining activities have continued in 'proposed' Amerindian titled lands, affecting villagers and causing uncertainty for the miners.

Figure 4.34: Proposed Amerindian villages



Source: GLSC

4.4.3. The political economy of mining in Guyana

Even as the mining sector has become more of a powerful social, political, economic, and environmental force in Guyana, there have been few prior attempts to examine critically the "power dynamics that link the political directorate to powerful entrenched mining interests" or to disentangle "the variety of stakeholders lumped under the generic term 'miner'" (Bulkan & Palmer 2016, p. 3). Such a lack of research arguably obscures a better understanding, not only of the "loci of power" in the sector, but also of the conditions of production for poorer operators and the possible differentiated effects of reforms or changes to the sector (ibid. p. 3). This section will, by contrast, analyse the social relationships that have developed within the sector that will strongly inform the case studies in Chapters 6, 7, and 8.

4.4.3.1. Small-scale claims

Although the number is difficult to track due to its dynamic and informal nature, it is estimated that around 15,000 people work directly in the gold mining sector in Guyana,

with further thousands indirectly involved[29] (Thomas 2009). As of 2015, there were around 18,000 claims. In a situation of perfect equality, the 3,000 or so dredge owners in the sector would each own around six claims. Such distribution would, as Bridge (2002) has pointed out, be in the spirit of the 1989 Mining Act, which was crafted to facilitate access to the sector for Guyanese citizens.

However, of the 18,000 small land claims verified in 2015, analysis shows that there are in fact just around 1,400 *different* claim owners, who may be individuals, or businesses. Of this 18,000, internal GGMC analysis has shown that just 50 people control 12,279 claims, more than half of all claims, with some owners controlling hundreds each. Indeed, the top claim holder has 1,500 claims. As there are 1,400 different small claim holders, this means that 1,350 people control the remaining 5,521 claims, with 532 people owning just one or two claims each. This level of inequitable distribution represents a Gini coefficient of approximately 0.7, a very high degree of inequality[30].

4.4.3.2. Medium-scale properties

Among medium-scale property ownership, there is a similar level of concentration, but the effects are more extreme due to the larger size of property (up to 1,200 acres, rather than just 27 acres for a claim). Of the 3,773 medium-scale mining permits, there are only 764 *different* owners who have any acreage[31], while 636 individuals hold only one property each. The top 50 individuals control 1,719 permits, representing almost 60% of the total land area held in medium-scale mining permits, and the top 100 individuals control 2,158 permits, or almost 70% of the land held in medium-scale mining permits. The largest single owner controls 196 permits, representing more than 192,000 acres, or 7% of the total medium-scale mining permit land. As there are 764 different property owners with acreage, this means that the remaining 90% of individuals control the remaining 35% of the land held under medium-scale mining permits between them. This level of inequitable distribution represents a Gini coefficient of 0.74.

---

[29] This number is estimated by the GGMC by multiplying the supposed number of different dredges by the typical number of persons required to work on an operation, which is generally considered to be six. Due to the likelihood that there are many illegal, unlicensed dredges operating, it is probable that this number is greater than official estimates.
[30] The Gini Coefficient measures the degree of income equality in a population. The Gini Coefficient can vary from 0 (perfect equality) to 1 (perfect inequality). A Gini Coefficient of zero means that everyone has the same income, while a Coefficient of 1 represent a single individual receiving all the income.
[31] The data shows that there are in fact 1,028 different property owners, but that more than 300 of them have not, as of early 2016, actually been allocated any land.

Of the 10,049 medium-scale prospecting permits, there are only 1,105 *different* owners who have any acreage[32], and while 988 individuals only hold one property each, the top 50 people control 4,410 of the permits, representing 56% of the total land area held in medium-scale prospecting permits, and the top 100 individuals control 5,732 permits, or 67% of the land held in medium-scale prospecting permits. The largest single owner controls 477 permits, representing 613,640 acres, or 8% of the total medium-scale prospecting permit land. As there are 1,105 different property owners with acreage, this means that beyond the top 100 owners, the remaining 90% of individuals control the remaining 33% of the land held under medium-scale prospecting permits between them. This level of inequitable distribution represents a Gini coefficient of 0.76.

The sheer scale of the control of medium-scale properties (both MPs and PPMSs) by a tiny elite can be illustrated graphically using the maps below, with Figure 4.35 displaying in grey the GIS data for all medium-scale properties in existence in 2016, and Figure 4.36 highlighting in red a GIS filtered layer of the top 25 owners' properties:

Figure 4.35: Mineral property coverage

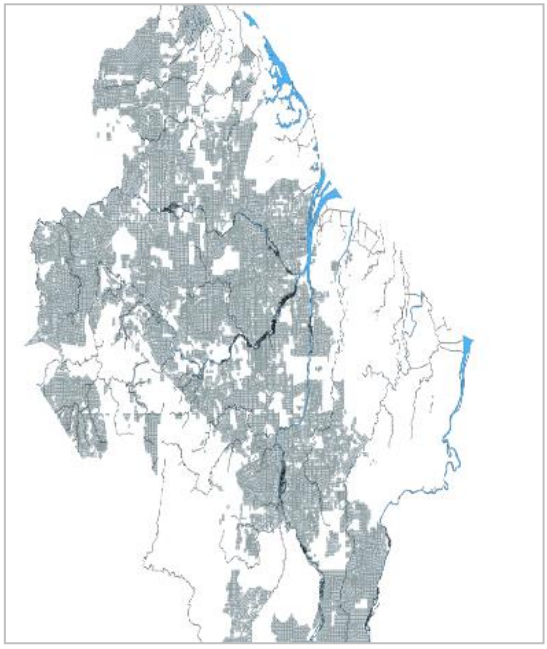
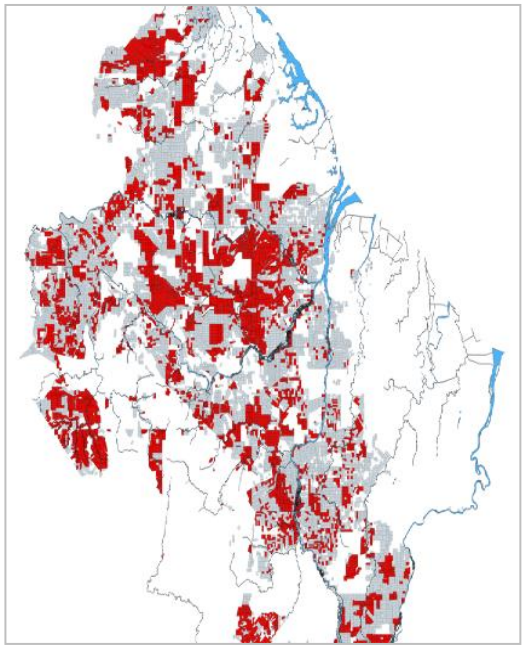


Figure 4.36: Medium-scale properties filtered by the top 25 owners



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at **http://data.gim.gov.gy/**

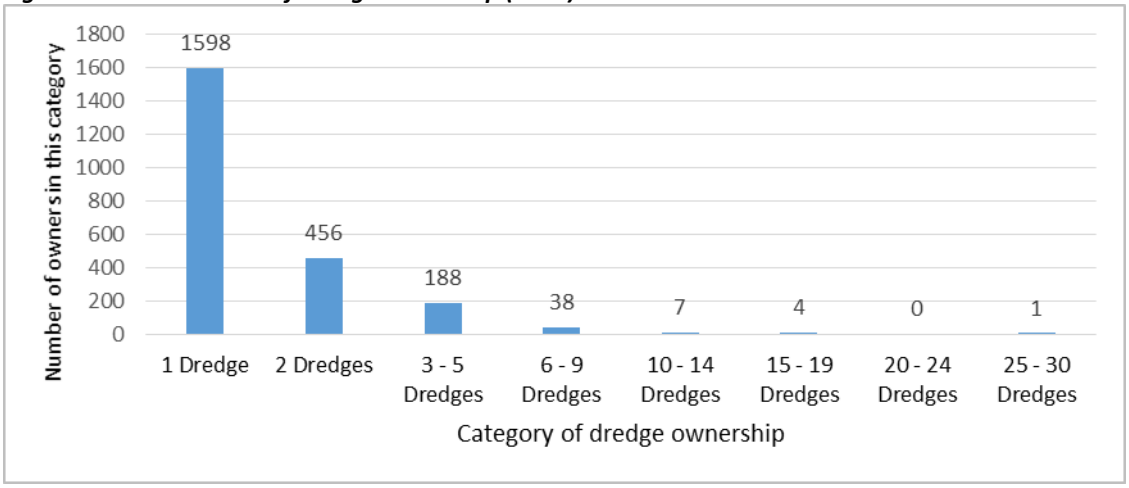
[32] The data shows that there are in fact 1,824 different property owners, but that more than 700 of them had not (as of early 2016) been yet allocated any land.

4.4.3.3. Segmentation of dredge ownership

While the above analysis shows that there is a highly inequitable land tenure structure, analysis of dredge numbers and ownership reveals further patterns about the structure of the mining sector. While there were around 3,349 licensed dredges in 2015, IADB (2015) estimate there were 2,292 *different* mining businesses, in the sector. Again, a perfectly equitable structure would see around one dredge owned by every owner/business, which would mean that around a fifth of all those 15,000 people working in the mining sector were dredge owners, with the remaining four-fifths working as labourers.

However, in reality, IADB (2015) estimate that, among the 2,292 businesses that were verified in the sample as dredge owners, dredge ownership was segmented into several different categories. As is illustrated in Figure 4.37, the vast majority of dredge owners (1,598, or 70% of the total) own only *one* dredge, and 2,054 (or 90% of the total), own either one or two dredges. The most exclusive category of dredge owners (what IADB (2015) term 'magnates' – and comprising just 12 business entities) own more than ten dredges or other gold-processing equipment each, with the largest owner owning 29.

Figure 4.37: Breakdown of dredge ownership (2015)



Source: IADB (2015)

4.4.3.4. Landlord-tenant relations

The preceding analysis of land and dredge ownership in Guyana invites two hypotheses about the dredge owner-landlord relationship that will pre-sage the empirical analysis of this relationship in Chapter 6.

Firstly, the largest landowners (who are *also* invariably the largest dredge owners) control significant swathes of mining land, but, as the number of properties they own dwarfs the number of dredges by some magnitude – with some large miners owning dozens, and in some cases, hundreds, of mineral properties – this indicates that they are *not* working on the vast majority of properties under their control, but, as the qualitative analysis showed, are renting them out.

Secondly, the one-dredge owners who make up the majority (70%) of total licensed dredge owners invariably do *not* own a mineral property themselves, with only a small percentage of them *also* being property owners. Among the sample of miners interviewed for this thesis, around 75% of dredge owners were landless. This chimes with previous qualitative studies, which have estimated that around 80% of dredge owners work as tributors or tenants on someone else's property (Lowe 2006; Thomas 2009).

Analysis of GGB data for 2016 shared with the author confirms not only the numerical significance of this category of miners, but also their enduring economic importance. Indeed, while the top 100 small and medium-scale gold producers (out of a total of 2,259 declarers for 2016) accounted for 141,341 oz. (or 28.3%) of the total 500,000 oz. declared, the remaining 2,159 producers still accounted for 358,869 oz. (or 71.7%) of total declarations. As these smaller producers are also leasing land from landlords and paying them percentages on the gold they are producing, their economic importance is further augmented.

Politically – as well as discursively – one-dredge owners then emerge as significant characters in Guyana's political ecology of mining: as the 'villains' who are blamed for the majority of environmental abuses and infringements on indigenous lands (Dooley & Griffiths 2014); as the 'victims' who are both being exploited by landowners and threatened by changes represented by a green mining agenda (Bulkan & Palmer 2016); and as the potential 'heroes' who may somehow become champions of sustainable mining, contributing to the economy while also 'fighting' climate change (Childs 2014).

4.5. Conclusion

This chapter has examined the national political ecology of the gold mining sector in Guyana, in answering research sub-question one. It has shown that the character of the small-scale gold mining sector in Guyana is the product of an interplay of socio-technical, socio-ecological, and administrative dimensions. These dimensions relate to the geographical proximity of gold deposits to rivers and streams, the idiosyncratic nature of the dredging technology employed, and the early formalization of the sector – itself the result of historic British colonial attempts to maintain control over mining activity to protect the sugar plantations' labour supply.

In examining the spatial and temporal trends of this gold mining activity, the chapter showed how a rapid expansion in activity was driven by both global and local forces. Global forces were principally the world gold price, which provided an accelerated demand for mining land, especially following the global financial crisis in the late 2000s. Local and regional forces related to changing institutional rules and regulations that ushered in a more welcoming investment climate, the greater availability of cheaper technology, stagnation in agricultural employment, and a politically and economically-driven interest in land speculation.

As was seen, this heightened demand for land led to a growing spatial occupation of the mining sector within Guyana's territory that not only worsened environmental conditions (providing the impetus for 'green' reform agendas that will be explored in more detail in the next chapter), but also inflamed pre-existing tensions and conflicts between different land users, particularly small-scale miners and Amerindian communities – dynamics that will be explored in more detail in Chapters 7 and 8. The expansion in land demand also had powerful – and hitherto under-analysed – structural dimensions, with the already-inequitable nature of property and dredge ownership becoming intensified as the amount of land under the control of a small class of well-connected businesspeople increased. This transformed the social and economic relations of land access for small-scale dredge owners – dynamics that will be explored in more detail in Chapter 6. The next chapter will examine some of the discourses and accompanying policy initiatives that have tried to manage the mining-environment relationship in Guyana in recent years.

Chapter 5: Environmental policy discourses and mining reform in Guyana

5.1. Introduction

In answering research sub-question two, this chapter will identify specific 'phases' of reforms that have been connected to political and geopolitical events and discourses in and out of Guyana, and the specific concrete interventions that have accompanied these discourses. In so doing, it will identify the key actors and interests who have promoted particular narratives about the mining-environment relationship, and those who have attempted to challenge and resist the narratives and offer alternative perspectives and visions – revealing environmental policy development and implementation to be an inherently contested process. After examining the four distinct waves of reform, the final section will assess the reforms in terms of the mainstream formalization-centred reform 'storyline' that was identified in Chapter 2. It will disaggregate the storyline by its approaches to the two main institutional contexts under which land is mined in Guyana, state and indigenous lands, finding that, despite a recent return to more repressive policies, the approach allies closely with the storyline.

5.2. Waves of mining reform in Guyana

It is possible to separate Guyana's reforms into four distinct waves. Although this periodization is somewhat arbitrary, the waves identified here are nonetheless connected to distinct approaches to – and discourses on – the sector.

5.2.1. Wave 1: Pre-Omai: Investment-focused reforms (-1995)

As Lowe (2003) has documented, historical attempts to govern and reform the mining sector in Guyana were largely focused on putting the institutional and legal structures in place to enable the state to maximize the capturing of revenue and the exertion of control over activities. Although some of these regulations expressed vague aspirations about maintaining a 'clean environment', they were not typically connected to concrete obligations that impinged on miners' practices (Bulkan & Palmer 2016).

This was to change in the 1980s when incipient global awareness of rapid ecological change accompanied a greater local awareness of emerging environmental issues related to alluvial mining in Guyana. The impacts of river mining, in particular, began to be debated and discussed within the GGMC[33] and beyond[34]. Nonetheless, the drafting of the 1989 Mining Act prioritized investment-attraction above all else (Bridge 2007), and an internal GGMC paper from 1992 itself acknowledged that the Act contained "no specific provision for (the) prevention of pollution or the protection of the environment" (Woolford & Watkins 1992, p. 4).

A National Environmental Action Plan (NEAP) in 1994[35] did however indicate that the national attitude towards the environment was slowly changing, and, acknowledging the damage being caused by the newly-arrived 'missile' dredges, it expressed the intention to introduce Environmental Management Assessments (EMAs)[36] for medium and small-scale mining operations in order to promote "environmentally safe mining" (Government of Guyana 1994, p. 35). By this stage, international NGO attention (much of it rooted in the indigenous cause) had begun to turn its attention to the potential environmental governance challenges associated with the increasing number of foreign companies operating in Guyana. However, this was more focused on the environmental and social impacts of logging, rather than the impacts of mining (Colchester 1992; Sizer 1996).

5.2.2. Wave 2: Post-Omai: Entering the environmental age (1995-2008)

Although the wheels were already in motion as a result of the rapid increase in land dredging from the early 1990s, the 1995 Omai cyanide spill (when a large-scale mine collapsed in heavy rain releasing millions of gallons of polluted water into the Essequibo river) was the stimulus for a flurry of environmental legislation and activity in Guyana (Bulkan 1998). Indeed, in 1996 an environmental unit was created within the GGMC to deal with mining-specific environmental issues; the country's first comprehensive

[33] This is evinced by the government commissioning of a report by Cremer and Warner (1990) entitled 'Gold Mining in Guyana: A Review of Environmental Aspects of Dredge and Small Pit Mining Operations.'
[34] Colchester (1997, p. 72) reported that, as early as 1994, Brigadier Joe Singh expressed public concern that the Konawaruk River was "dying" as a result of uncontrolled mining.
[35] Funded by the World Bank, for Lakhan et al. (2000), this exemplified Guyana's new willingness to engage with international agreements and treaties.
[36] This came into force in 1996, after which applicants for a medium-scale mining permit were required to sign an EMA obliging them to honour several environmental commitments, such as constructing tailings ponds and using retorts and respirators.

environmental law, the Environmental Protection Act, was passed in 1996 (along with the creation of the Environmental Protection Agency (EPA); and a Memorandum of Understanding (MOU) was signed between the GGMC and the newly-formed EPA, covering inter-agency collaboration (Lakhan et al. 2000; Lowe 2006).

In response to the growing awareness of environmental impacts of land dredging activity and the effects of 'missile' dredging on rivers and river banks, pre-existing local mining regulations began to be adjusted. For example, while Lowe (2006) argues that a 1992 amendment had sought to initially facilitate profitable 'missile' dredging by expanding the land area within a 'river claim' by 300 feet on both sides of the river bank, an amendment introduced in 1996[37] re-claimed these areas for protection, prohibiting mining from taking place in a buffer zone fixed at 66 feet from the low water mark on both river banks.

Directly stimulated by Omai, there were also a range of new bilateral and NGO-funded projects and activities specifically targeting the mining-environment relationship. The most significant of these interventions was the Guyana Environmental Capacity Development Mining Project (GENCAP) programme, which was funded by the Canadian government and implemented in partnership with the Guyanese government – for many observers, in direct response to fact that Omai was a Canadian company (Lowe 2006).

GENCAP was a significant programme – lasting six years and worth US$3m – and is widely credited with transforming the governance of the mining sector in Guyana (Lowe 2006; Masson et al. 2013; IADB 2015). As well as entailing a number of activities – such as training miners and GGMC and EPA staff on issues such as environmental management and mercury usage, conducting environmental field surveys and demonstration exercises, and funding land reclamation (as per Image 5.1) – GENCAP also funded the drafting of new Regulations[38] and accompanying Codes of Practice for the mining sector that came into law in 2005 (Lowe 2006). The codes included guidelines for mercury use, mine reclamation, mine effluents, contingency and response plans, mine waste management and disposal, and tailings management (IADB 2015).

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[37] See "buffer areas" definition in Mining (Amendment) Regulations No. 3 of 2005.
[38] Mining (Amendment) Regulations No. 3 of 2005.

Despite the fact that the Omai disaster was caused by a large-scale mining accident, the small-scale mining industry generally received these measures positively, largely because they viewed them as grounded in, and supported by, GENCAP's rigorous analysis and research (Interview 90). It is also likely that, given the GGMC still only had 11 field officers tasked with enforcing the raft of new regulations, miners did not feel as if they would feel much change on the ground.

Image 5.1: Acacia trees planted in Mahdia under the GENCAP project

Source: Stabroek News

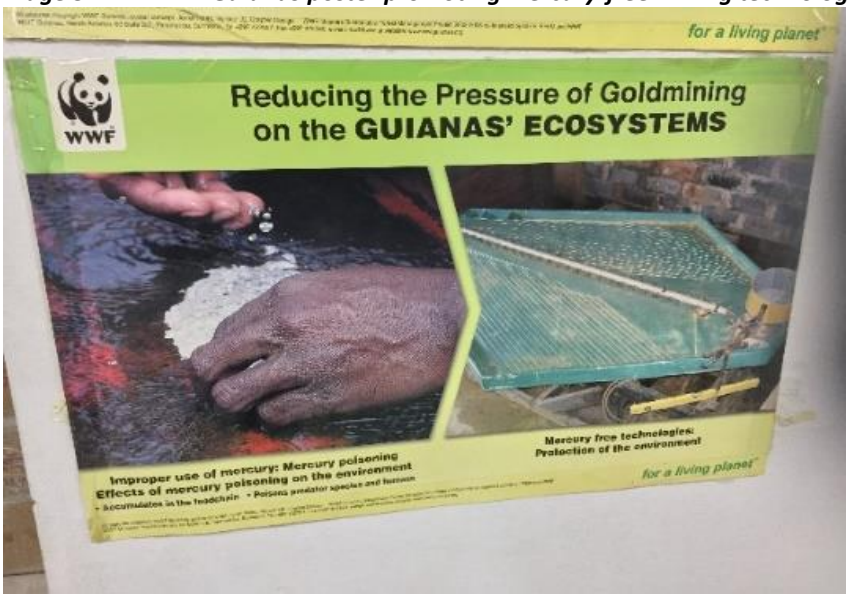
As a result of the capacity-building efforts stimulated by GENCAP, by the mid-2000s, the GGMC was, in theory, equipped with a better technical capacity to monitor and enforce environmental standards in the mining sector. Its officers were trained to carry out regular monitoring of issues such as water quality (as in Images 5.2 and 5.3), mercury contamination, and overall environmental change, and to conduct the training of miners in mine safety management and technological best-practice. The GGMC as a whole saw its remit significantly broadened to encompass the administration of a host of new procedures that were the result of the incorporation of environmental thinking into mining policy – albeit with no new personnel.

Images 5.2 and 5.3: GGMC officers conduct turbidity analysis on the Potaro River

Source: Author

In addition to the GENCAP programme, WWF-Guianas embarked on a series of interventions from 2006 onwards under the auspices of a 'Reducing the Pressure of Goldmining on the Guianas Ecosystem' (displayed in Image 5.4) , which included a 'Goldmining Pollution Abatement Project' (Stabroek News 2007). As well as funding several mining sector studies[39], these interventions also extended to the development of a training programme (which was never implemented) in environmental awareness for small miners[40], and several workshops for miners on environmental practices.

Image 5.4: A WWF-Guianas poster promoting mercury-free mining technologies



Source: Author

[39] Such as Vieira (2006), Lowe (2006), and Legg et al. (2015).
[40] See the planned programme in Lowe (2013).

5.2.3. Wave 3: Post-LCDS: Forest-focused, global reforms: (2009-2015)

5.2.3.1. The LCDS

While the previous wave of reform was clearly shaped by the response to a singular event – Omai – and was marked by a sense of cooperation between the small-scale industry and the state, the approach to the mining sector during the third wave was more contentious and contested. This can be attributed to the somewhat ill-defined nature of the environmental discourse that emanated during this period, and the corresponding lack of agreement about how the mining sector should respond to the newly forest-focused narrative. It can also be attributed to the top-down nature of policy development during this period, and the naturally more defensive position of miners amidst higher land competition and record gold prices (Bade 2013; Bulkan 2014).

In 2009, after several years of lobbying by the then-President Jagdeo, Guyana and Norway entered into an agreement according to which Norway, through its International Climate and Forest Initiative (NICFI), pledged to pay Guyana US$250m over five years (between 2010 and 2015) in exchange for Guyana maintaining its national deforestation rate below an agreed 'combined' reference level of 0.275% per year (Angelsen 2017). The US$250m amount was considered a "result-based payments for forest climate services" under the REDD+ modality (Government of Guyana 2013b, p. 8).

Guyana agreed to use the payments to fund projects and programmes of its own choosing that both supported its transition to a Low Carbon Economy through its LCDS and its efforts towards satisfying the 'enabling conditions' for REDD+ required by Norway[41] (Egede-Nissen 2014). Guyana chose to spend the money on several pre-packaged projects that were widely believed[42] to have been aimed at trying to secure the political support of the increasingly important Amerindian population, while also directing resources (under obligation) towards the significant bolstering of the Monitoring, Reporting and Verification System (MRVS) capacity of the GFC and the field monitoring capacity of

[41] 'Enabling conditions' were the key institutional and policy measures that Guyana had to implement within the terms of the MOU. They included measures such as outlining a plan for advancement on the FCPF programme, acceding to the EITI, securing titles for indigenous villages, and integrating land use planning (Laing 2014).
[42] As argued by Bulkan (2013, 2016).

the GGMC[43]. Funds were also put aside for developing better overall land planning through a new Special Use Land Committee System (SLUC)[44] whose planning would be informed by MRVS data.

5.2.3.2. The mining lobby fights back

Although a 2009 LCDS 'factsheet' explicitly stated that "mining and forestry activities will not be required to stop", miners were nonetheless initially wary of the potential ways in which the sector may be affected by the LCDS (Government of Guyana 2009, p. 4). The annoyance and scepticism at not having been consulted during policy development turned to anger however at Jagdeo's threats to introduce a raft of new requirements for the mining sector, including a complete and imminent ban on mercury (Stabroek News 2009).

The most dramatic of these threats – and one that led to marches, protests, and shutdowns in several towns – was a directive that, if implemented, would have made it mandatory for every miner to give the GFC six months' notice of their intention to mine. The purpose of this notice was to enable the GFC to carry out a detailed analysis of the biodiversity and forestry value on the proposed mining property before mining could be permitted to commence (Kaieteur News 2010). The measure, which was also intended to minimize "indiscriminate" felling of trees, was one that the GGDMA claimed represented the government's secret way of securing an "exit strategy" for the sector (Stabroek News 2010).

Although some shrewd insiders viewed the government's propositions as empty threats intended to give international observers the impression that Jagdeo was taking action on the mining sector[45], the coordinated response of the industry nonetheless illustrated the sector's political and economic power (Hilson & Laing 2017a). The GGDMA in particular was sustained in its criticism of what it saw as an international agenda that was

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[43] The GGMC 2011 Annual report acknowledged the need for increased monitoring capacity directly as a result of the growth in the Mining Industry and the requirement for greater legal compliance under the Low Carbon Development Strategy.

[44] The SLUC was established in 2009 to manage land use conflicts and issues, including aspects of land use as they related to degradation from extractive activities. By 2013, SLUC had stopped meeting, with miners reporting in 2012 that they had heard nothing back from consultations that had been held in 2010 (Stabroek News 2012a).

[45] Several well-placed interviewees contended that Jagdeo believed that the agreed deforestation reference level was so far above Guyana's actual deforestation rate that the country would be able to collect the funds each year without having to interfere with land use policy (Interview 22).

distorting the approach to the mining sector by highlighting a non-priority issue of deforestation[46]. It maintained that what was needed was not more regulations, but rather the better enforcement of existing ones (Stabroek News 2010). It persistently pointed out Guyana's low deforestation rate, and made bold counter-proposals to the government that 4% of the country be committed as a gold mining reserve (Stabroek News 2012b).

The mining sector's lobbying power was further underlined in 2012 following a spike in deforestation that caused a subsequent loss of REDD+ funds, but that led to no change in the policy approach to the sector (REDD-Monitor 2013a). Indeed, as the numerous statistics in Chapter 4 illustrated, the period from 2009 onwards saw nothing but a massive expansion in the sector's land coverage, the intensity of dredging activity, and in gold production. International attention began to highlight the contradictory co-existence of rising forest degradation and a Norway-funded forest protection scheme (REDD-Monitor 2015). In an attempt to redress some of the negative publicity around forest loss, the GGMC embarked on a series of larger-scale land reclamation projects, re-contouring and re-vegetating mined-out areas in Region 7 (as illustrated in Image 5.5), adding to the pilot work that had been started under GENCAP around the Mahdia area (GGMC 2014).

Image 5.5: A re-contoured mining pit near Olive Creek, Region 7

Source: INews

[46] Such arguments are somewhat supported by analysis from Lowe (2006), who found that deforestation only ranked as the fourth greatest concern of a range of stakeholders (although this was admittedly based on pre-gold boom data).

Events in August 2012 further exemplified the ability of the mining lobby to shut down radical environmental reforms that threatened its interests. After driving back an attempt by the government to ban river mining in the light of significant environment damage, the GGDMA then hounded Brigadier Joe Singh, the then-acting head of the GGMC, out of the position after he attempted to unilaterally ban the issuing of new mining applications in pending Amerindian land title extensions (Stabroek News 2012d). In a statement, the GGDMA claimed that Singh was an "environmentalist" who had consistently taken "anti-mining" positions" (ibid.). While the LCDS had lost momentum following the 2011 election of Ramotar and the disappearance of Jagdeo from national politics, the industry had become more adept at organizing itself to contest criticism of its activities[47] (Bulkan & Palmer 2016).

Despite the exposure of the mining-deforestation nexus by 2012, the sector had managed to evade major reforms during this period, with the state reduced to attempting to manage mining impacts through "more stringent monitoring and enforcement of compliance" of existing regulations (Government of Guyana 2009, p. 4). More radical measures that had been proposed by SLUC in 2010, such as the requirement for miners to prospect before mining, had quietly been dropped amidst protests from the industry that they would "decimate" the sector (Stabroek News 2010).

5.2.3.3. NGO reluctance

The state's reluctance to 'deal with' mining was meanwhile being complemented by a reluctance among International Non-Governmental Organizations (INGOs) to 'buy into' the reform 'storyline' or to commit to interventions that would aim to transform it towards more sustainable ends (Interview 8). An indication of how reluctant the Norwegian government was to be seen by its own Parliament to be funding extractive projects was illustrated by its explicit demand to remove 'sustainable mining' as a fundable sector from the REDD+-funded 'Micro and Small Enterprise' project (Interview 11). Such a lack of engagement with the mining sector was criticized by local policy-makers and

[47] The GGDMA had, for example, commissioned Professor Clive Thomas, who at the time was the Director of the Institute of Development Studies at the University of Guyana, to draft a report, entitled, 'Too Big to Fail', that was designed to highlight the economic importance of the mining sector (Interview 22).

industry figures alike who saw the actions as evidence of an inherent anti-mining bias in international policy debates (Interview 13).

The financial commitments of note that were made by INGOs during this period were small contributions from the WWF-Guianas and the UNDP (worth US$60,000 and US$50,000, respectively) towards the establishment of the GMSTI (Guyana Chronicle 2013; INews Guyana 2016c). As well as offering elementary prospection training to miners involving GIS and GPS skills, the GMSTI was also to train them in safe and environmental mining practices in accordance with the 2005 Regulations. Images 5.6 to 5.9 display some of these activities.

Image 5.6: A GMSTI lecturer gives a lesson on 'benching'

Image 5.7: Benching demonstrated at the GMSTI 'model mine'

Image 5.8: Miners learn GIS at a GMSTI computer class

Image 5.9: Miners see a functioning 'model mine'

All images: Author

5.2.3.4. Amerindian activism

While the LCDS-driven, forest-centric discourse meant that the sector was threatened with new direct regulatory measures, it also faced indirect challenges as a result of the increasing emphasis on the protection and expansion of indigenous lands and protected areas. The Amerindian population had, after all, been placed at the forefront of the LCDS programme, and since they had won a political victory in the form of a new Amerindian Act in 2006, their advocacy had become significantly strengthened through their alliances with international supporters (Dooley & Griffiths 2014).

One of the main LCDS-funded projects, worth US$10.7m, was the Amerindian Land Titling (ALT) programme, through which remaining untitled Amerindian villages would be demarcated and granted their titles, and other existing titled villages would have their extension applications assessed. The justification for the inclusion of this project in the LCDS was that securing tenure for Amerindians would not only enable them to protect the forests from encroachments while enabling them to continue exploiting them in 'sustainable' ways, but that it would also enable them to potentially benefit financially from direct REDD+ payments through an (as-yet unspecified) 'Opt-in' mechanism (Government of Guyana 2013, 2014).

As will be seen in Chapters 7 and 8, these titling issues are still highly contentious and the subject of much unresolved debate, but at its core were objections by the mining lobby (and others) at what was seen as an over-stretching by governments to accommodate Amerindian demands. While the GGDMA stated, for example, that it had "no objection to the existing lands over which the Amerindian peoples have titles (currently 14% of Guyana)", they strongly resisted "the proposed extensions, which would result in approximately 35% of Guyana being made available, exclusively, to a people who represent less than 10% of Guyana's population" (Stabroek News 2014b).

Further attempts by Amerindian villages to take advantage of the political moment to challenge legal rulings that enabled pre-existing mining claims to continue on titled villages all failed[48], and the mining lobby vowed to fight further attempts by Amerindians

[48] See for example Kaieteur News (2013).

to close off further lands from mining investment (Stabroek News 2012c). The government remained silent on the issue, leaving it to the courts to uphold the laws that have been much-criticized by Amerindian advocacy groups[49] and individuals[50], while being robustly defended by their framers and authors[51].

While the momentum behind indigenous land claims during the LCDS period was perceived as a concrete threat to the mining sector's access to potential mineral-bearing lands, the GGDMA-led mining lobby repeatedly expressed annoyance at what it saw as an inaccurate framing of Amerindian livelihoods that was nonetheless underwriting the policy approach to land and resource governance (Kaieteur News 2012). It saw the perpetuation of these discourses on Amerindian victimization by mining activities as being powerfully driven by the Amerindian People's Association (APA) and its international backer, the Forest Peoples Programme (FPP) (Interview 22). For the GGDMA, what was routinely being overlooked was the reality that almost – if not – *all* Amerindian villages were deeply involved in the mining sector and were themselves presiding over mining-related degradation – including within their own villages[52] (IHRC 2007; Hennessy 2015; IADB 2015).

This mis-diagnosing of the true nature of Amerindian livelihoods was meanwhile contributing to the failure of a succession of 'alternative livelihoods' projects targeting Amerindians. The Amerindian Development Fund (ADF) – another substantial (US$8.1m) LCDS project aimed at funding the development of non-extractive livelihoods in hinterland areas in order to try and forestall Amerindian entry into the mining sector – was having a minimal impact as a result of both the paucity of funds committed to each village and the impossibility of displacing the lure and profitability of gold mining. As was reported in 2015, around 70% of ADF projects had failed to meet their objectives (Stabroek News 2015d).

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[49] See especially the Forest People's Programme internationally, and the Amerindian People's Association locally.
[50] See for example Bulkan (2016).
[51] See for example Stabroek News (2013) and Bulkan (2006).
[52] Participation is widespread, especially across regions 1, 7, and 8. One village, Jawalla, in Upper Mazaruni, was said to have had over 80 dredges operating within its titled land as of April 2017, controlled exclusively, and illegally, by villagers, but permitted by GGMC. Another village, Isseneru, featured on the GGB Top 100 producers for 2015, having registered itself with the GGMC as an official gold producer (IADB 2015).

Despite miners' concerns about the growing Amerindian activism however, the slow progress in all areas of the LCDS (and its accompanying Forest Law Enforcement, Governance and Trade (FLEGT) and FCPF projects) meant that miners were temporarily quelled, and indigenous villages, who were having their land applications and project funds delayed or rejected, were left frustrated and disillusioned (Kaieteur News 2017f).

5.2.3.5. Beyond forests

Beyond the forest-focused debates that had been stimulated by REDD+ and the LCDS, several other major initiatives were established during this phase that aimed to continue to align mining activity with emerging international agreements and norms on 'green' or 'low carbon' development pathways. The most significant of these focused on mercury. In October 2013, the Government signed on to the Minamata Convention on Mercury[53], agreeing to ban the production, export, and import of a range of mercury-containing products by 2020 (Kaieteur News 2013c). The Board of the GGMC subsequently set up a Mercury Free Mining Committee whose mandate was to oversee the identification and testing of technologies to determine their suitability for the local context and to advise mining businesses about converting to non-mercury technologies. The committee began testing a range of possible technologies[54] aimed at more efficient gold recovery, including Knelson Concentrators, Shaking Tables, Gold Flotation, and Gold Katchas (IADB 2015).

Image 5.10: A GGMC demonstration of a 'shake table'

Source: Stabroek News

[53] A Global Convention on introducing a mercury phase-out.
[54] All of the above-mentioned are expensive pieces of machinery that use gravity to separate gold particles from tailings material.

A US$5m Mining Development Fund was subsequently set up from royalties collected from miners to support the technological development, fabrication, and testing of prototype plants and equipment that offered increased recovery rates of gold (Stabroek News 2014a). However, although the GGMC approached the commercial banks to manage the funds, they refused, citing perennial risks associated with investing in the mining sector (Kaieteur News 2015). In 2015, it was reported that not one miner had applied for the funds, with the GGDMA claiming that potential technologies were beyond the reach of most small miners (Stabroek News 2015a).

Miners were furthermore sanguine about the prospect of a mercury ban, largely, as one interviewee admitted, because, in spite of the government's rhetorical commitments to Minamata, it was considered to be merely paying lip service to reform to keep its international partners happy. As they explained:

> I was, like, on a one to one basis with politicians, nearby politicians, and I would say, you know the implications of this, and I was told things like, 'we only have to talk the talk' … We don't have to walk the walk… We'll kick the ball down the road for the next 10 years (Interview 22).

In addition to Minamata, Guyana also signed up for the EITI. As this is traditionally more geared towards ensuring large-scale mining transparency, it was however unclear how it would affect the small-scale mining sector.

5.2.4. Wave 4: Post-PPP/C: A focus on administration, safety, and revenue (2015-)

5.2.4.1. Top-down regularization

Having spent twenty-three years in opposition criticizing the governance performance of the People's Progressive Party/Civic (PPP/C), the new A Partnership for National Unity (APNU)-led coalition administration that took office in May 2015 put 'fighting corruption' at the forefront of its policy agenda (Demerara Waves 2016). With respect to economic sectors, the new administration's overall agenda was to re-exert state control over economic life and to eliminate the informal and discretionary practices and networks that had proliferated over the previous two decades (Stabroek News 2016a).

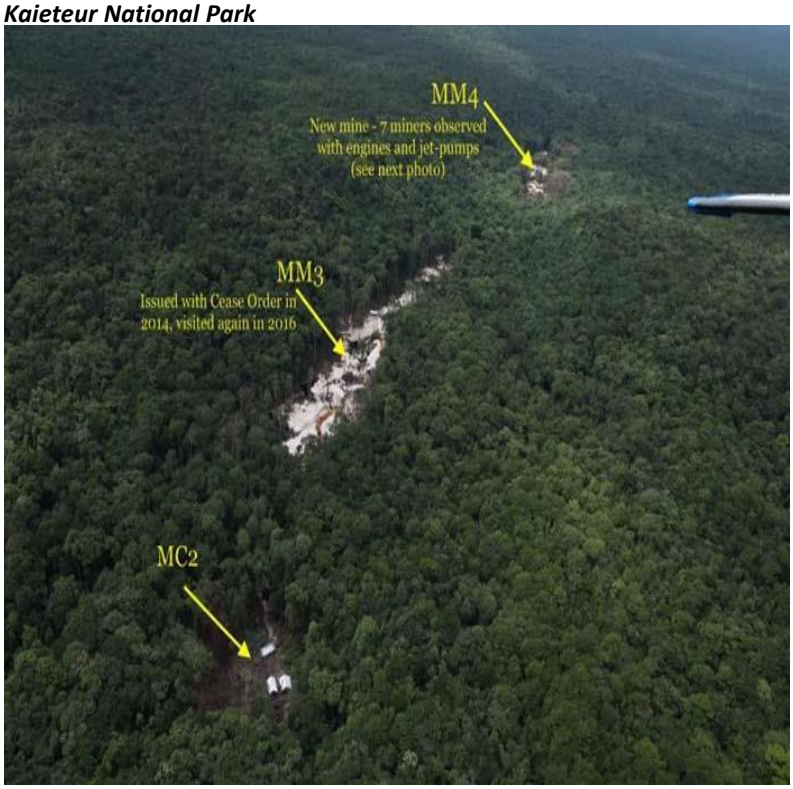
The approach to the mining sector was no different, where the priority appeared to be to clamp down on illegal activity that was perceived to be robbing the state of revenue, disadvantaging law-abiding businesses, endangering human health, and – tangentially – causing ecological degradation (Guyana Chronicle 2016c). In concert with the drive on regularization, the government also prioritized the issue of safety, and vowed to launch a Commission of Enquiry into every mining death (Demerara Waves 2015). In support of this emphasis on safety, it continued to fund the GMSTI's nationwide courses.

Such a regularization-style approach to mining appeared to convey a belief that it was largely the *illegal* nature of activity that was causing degradation, and that once activity was operating within the laws, environmental standards would improve (as per ILO (1999)). While this illegal activity was believed to be the responsibility of private mining sector actors, the 'Walrond Report'[55], leaked to the press in April 2015, appeared to illustrate the extent to which institutional corruption within the GGMC was also enabling poor practices (Stabroek News 2015b; Bulkan & Palmer 2016).

The sectoral governance drive saw firings and arrests within the Guyana Gold Board, the replacement of Managers within the GGMC, arrests of miners allegedly involved in smuggling and tax evasion, and militarized clamp-downs on illegal operations – especially those operating in national parks (GINA 2017; Kaieteur News 2017d; Stabroek News 2017d). These clamp-downs were now being carried out by a specially-appointed 'compliance and enforcement' unit, as illustrated in Images 5.11 and 5.12.

[55] For reference, see GGMC (2015).

Image 5.11: An enforcement operation finds illegal operations in Kaieteur National Park



Source: INews

Image 5.12: Military personnel accompany GGMC officers on an enforcement operation near to Kaieteur National Park

Source: Author

In the economic and administrative realm, existing measures, such as the 2005 regulations, were supposedly being more strictly enforced, and new measures were proposed, such as an increase in the so-called 'tributor's tax' (payable by all labourers) from 10% to 20%; the inclusion of miners in income tax responsibilities; a new gold selling transaction fee of US$10 per ounce; and an increase in the cost of environmental bonds (INews Guyana 2015; Kaieteur News 2016d; INews Guyana 2017). There was also an effort to clamp down on those mining illegally in others' properties or in Protected Areas – a practice known locally as 'raiding' (Kaieteur News 2016c).

This regularization drive drew significant ire from the mining lobby (Demerara Waves 2017). Particular offence was taken to the claim that miners had hitherto been functioning in a "free for all" manner, a claim that led to the GGDMA refusing to share an IADB report into the sector that it admitted would have been helpful to policy-makers (Guyana Chronicle 2016a). As with the perceived 'heavy-handed' approach to regularizing long-discretionary practices in other areas of the economy, for many observers, such a transition was too abrupt and risked marginalizing poorer segments of the population and, paradoxically, driving them into further illegal activity (Kaieteur News 2017e).

Relations between the sector and the government reached a new low in August 2017 when a coalition of industry actors (that included disgruntled smaller miners disappointed by the slow progress being made on syndicates and a wider coalition protesting the abrupt introduction of the new tax measures) announced it would be boycotting the annual Mining Week events (Stabroek News 2017f). In response to these protests, the government reneged on its proposal to increase the tributor's tax, meaning the mining lobby had once again successfully driven back a reform measure (Guyana Chronicle 2017e).

5.2.4.2. Environmental engagement

In terms of directly addressing environmental issues, the new government appeared to be focusing more on mercury than forest loss. For some observers, this shift in emphasis had as much to do with the new government's wish to distance itself from Jagdeo's LCDS 'legacy' as it seemed to represent an ideological rejection of what its intellectual leaders saw as the 'imposition' of an international agenda on forests onto Guyana's policy

direction[56]. The new government nevertheless continued to pursue the Norway-Guyana partnership, albeit while attempting to re-brand it as a supposedly 'more holistic' 'Green State' strategy (Stabroek News 2017c).

Despite pushing back the target date for a transition to a mercury-free mining sector from 2020 to 2027, the government appeared to put more concrete measures in place to achieve this goal (Stabroek News 2017h). For example, in 2017 it launched a US$29m project (that included a US$4.5m contribution from the Global Environmental Facility (GEF) and which would direct US$15m extra to the GGMC) to look into "strengthening the enabling framework for biodiversity mainstreaming and mercury reduction in small-scale gold mining operations"[57]. The mining lobby once again criticized these goals, arguing that adherence to existing regulations would be sufficient in minimizing the negative impacts of mercury (Kaieteur News 2017e).

As well as the focus on mercury, the government reportedly commenced a comprehensive internal review of mining regulations in response to criticism that the existing regulations were inadequate (Kaieteur News 2017c). However, despite public outcry following the Guyana Human Rights Association's (GHRA) (2017) exposure of widespread river pollution and degradation in the Upper Mazaruni region[58] (where they claimed that the Puruni was in "a ruinous mess of tailings and devastation"), the review of regulations appeared to still be driven by *industry* concerns – about taxation levels, gold recovery rates, and land access – rather than ecological ones (Kaieteur News 2017c).

The significant participation of GEF (see Figure 5.1) and several local chapters of large INGOs in ASM-focused projects meanwhile indicated that, after several years of non-engagement, their willingness to support the ecological transformation of small-scale mining practices (rather than merely funding non-mining livelihood projects) was growing. As a CI-Guyana staff member observed, this greater INGO interest in engaging

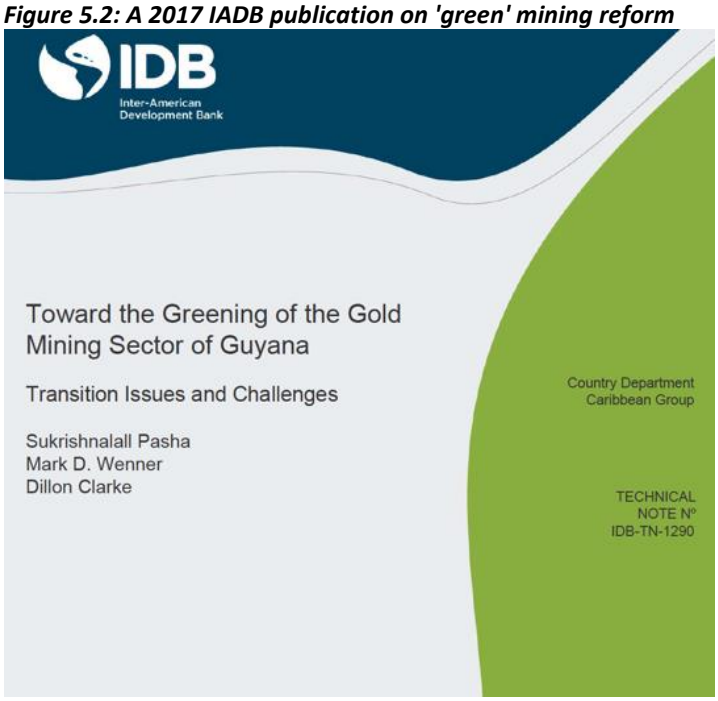
[56] It was the view of one well-placed interviewee that the new government's approach to environmental policy was being shaped by the Sustainable Development Advisor, Clive Thomas, a figure who had repeatedly criticized the economic and sovereignty implications of the Guyana-Norway agreement, and who had even argued that Guyana was poor because its deforestation rate was historically so low (Interview 29).
[57] Project document available at www.thegef.org/sites/default/files/project_documents/PIF_revised_0.pdf
[58] The GHRA has particular historical interest in the Upper Mazaruni region, having led campaigns in the Akawaio territory against hydropower development in the 1970s (Interview 29).

with mining was stimulated by the 2012 spike in the gold price and the subsequent mining-induced deforestation (Interview 18).

Figure 5.1: A 2017 poster promoting GEF's GOLD project

Source: UNEP

Figure 5.2: A 2017 IADB publication on 'green' mining reform



Source: IADB

As part of the new willingness among donors to engage with mining issues, the IADB also funded some research into environmentally-oriented mining reform, with the key public output being a technical note promisingly entitled 'Toward the Greening of the Gold Mining Sector in Guyana: Transition Issues and Challenges' – as in Figure 5.2

(IADB 2017). This paper focused heavily on technological solutions and mentioned little about the constraining issues that interviewees continually raised during fieldwork for this thesis, such as land access issues, tenure conflict, and corruption within the GGMC. The report concluded by listing 'environmentally-friendly' technologies[59] (which cost upwards of US$100,000 each) that miners could adopt, and suggested that miners could form groups to exploit economies of scale. Given that the GGMC has increasingly focused on the emerging oil and gas sector, it was unclear, at the time of writing, how much high-level leadership would be devoted to innovating further in the small-scale mining sector (e.g. Stabroek News 2017i).

5.3. The Guyanese articulation of the mainstream storyline: a critical assessment

This final section will clarify the Guyanese articulation of the mainstream ASM storyline that can be extracted from the preceding discussion on the twists and turns of Guyana's environmentally-oriented mining reforms. Within each of the three components of the storyline – from the broad assumptions about the mining-environment relationship, to the proposed formal institutions and the anticipated mechanisms of change – the attitude and approach to mineral governance on both state and indigenous lands will be examined.

5.3.1. Mining-environment relationship

The mainstream discourse on ASM reform is – as was illustrated in Chapter 2 and 3 – underwritten by the assumption that the negative impacts of small-scale mining are primarily caused by its illegal nature, but that policy efforts can be directed towards minimizing the ecological impact of mining through the installations and enforcement of institutions and the application of technology.

Historically, Guyana's more progressive (or some would say 'lax') stance to ASM (as well as its institutional inability to reasonably govern the sector) has allowed it to flourish without necessarily recognizing or prioritizing environmental protection. The international community has attempted to influence this attitude by encouraging the

[59] Such as 'concentrators', which are specific to particular types of soil, and therefore not appropriate for operators who are constantly moving around the hinterland.

adoption of measures that will prevent forest loss and degradation and water pollution and river destruction, whilst also advocating for the protection of indigenous livelihoods and the creation of jobs in non-extractive sectors. INGOs have however tended to take a hostile view of ASM, and have under-engaged with the sector's socio-economic benefits, while emphasizing its ecological and social impacts, favouring projects that prioritize the creation of employment in non-mining livelihoods.

In recent years, however, a markedly greater engagement with the sector among INGOs has paradoxically arrived at a time when the Guyanese government appears to have itself adopted a less permissive approach, with the post-2015 period in particular being characterized by a marked increase in concrete measures that threaten smaller operators. On State lands, this reform discourse has nevertheless been underwritten by more of a focus on the internal security, safety, and revenue-related risks of illegal ASM activity than an over-riding concern for its ecological impacts. Although still recognizing the auxiliary ecological benefits of greater regularization – and while rhetorically supporting the idea that the coexistence of ASM operators and environmental goals is still possible – many smaller miners feel as if the stricter approach reveals a desire to ultimately phase out smaller-scale operators.

With respect to the mining-environment relationship on indigenous lands, the dominant discourse continues to be characterized by the assumption that degradation is being caused by illegal – non-indigenous – miners. Because the only organization to challenge this discourse is the GGDMA – which is seen as partisan and unreliable on the issue – the wide participation of Amerindians in mining has yet to become recognized, investigated, or addressed.

5.3.2. Formal institutions

5.3.2.1. Property rights

In countries with widespread illegal mining, institutional interventions have focused on introducing property rights, with policy-makers aiming to 'mark out' the formal boundaries of mining and move illegal activity into these spaces so that environmental impacts can be minimized through the clarification of responsibility and ownership. As has been stressed throughout, Guyana has had the framework of formal property titles in place for some years. Thus, in Guyana's case, efforts in this area have rather focused on

clarifying and defending the sovereignty of existing mineral property, indigenous land, and Protected Area boundaries; adjudicating on the new land claims of indigenous villages; and resolving conflicts between mineral property owners and other land users.

Despite the formalized property system, however, illegal mining still prevails widely, with miners frequently working in properties owned by other people on State lands and within the boundaries and buffer zones of national parks, indigenous villages, and Protected Areas (a practice known as 'raiding'). Such transgressions have reportedly escalated rapidly in recent years, and the GGMC has sought to clamp down on them in increasingly militarized 'enforcement' operations.

On indigenous lands, despite growing criticism about the adequacy of the Amerindian Act in guaranteeing protection for communities against the negative impacts of mining, successive governments have continued to defer to existing laws that are promoted as offering Amerindians a robust process for taking action against infringements by illegal miners. Due to the strong support in policy circles for the idea that Amerindians are well-placed and well-equipped to protect forests for future generations, strengthening and expanding indigenous land and resource control through land titling initiatives has become a policy priority.

5.3.2.2. Regulatory and technological policies

For the mining activity taking place within legal titles on both state and indigenous lands, the signing of several international agreements on environmental issues such as mercury and forests has led to a narrowing of the definition of 'legal' mining and an intensification in the requirements for small miners. These new expectations are embodied in new codes and regulations, particularly the 2005 Regulations. Information about these new requirements – and guidance about how to adhere – has been offered to miners in educational programmes. Those errant miners who are not prepared (or able) to make necessary investments to fulfil requirements are warned that they will be squeezed out of the sector. In order that Guyana fulfils its obligations to the international treaties it has acceded to, technological ('clean' recovery technologies) and organizational (group production) solutions have been proposed.

Within titled indigenous lands, policy efforts have meanwhile focused on attempting to promote livelihood alternatives to mining, as seen in the ADF project. There has been little recognition of the deep Amerindian participation in mining, and therefore little accompanying technical support in that area. As with the policing of property rights, the monitoring and enforcement of the formal rules and regulations has taken on an increasingly militarized approach through the newly-established 'Compliance Unit'.

5.3.3. Mechanisms of change

As regulatory and technological interventions have been increasingly calibrated to promote a 'greener' form of small-scale mining, it is assumed that adherence to the rules will secure the desired outcome. It is assumed that adherence will be voluntarily chosen by miners who have been educated about the rationalization for reform; and where there are transgressions, the regulator will enforce appropriate penalization. On indigenous lands, villagers in titled and untitled lands will be protected from mining impacts through the enforcement of existing property boundaries and regulations by the regulator. In titled villages, communities will be able to access funds for non-mining livelihoods and forest carbon projects that will reduce the demand for mining livelihoods.

5.3.4. Summary of the local Guyanese articulation of the mainstream storyline

Across both tenure systems, the assumptions and approaches representing the Guyanese articulation of the mainstream reform storyline are illustrated in table 5.1 below.

Table 5.1: Summary of the Guyanese articulation of the mainstream storyline

<table>
<tr><td></td><td>1. State lands</td><td>2. Indigenous land</td></tr>
<tr><td>1. Mining-environment relationship</td><td>Small-scale mining is responsible for a range of environmental problems on State lands in Guyana where miners do not adhere to the established rules and regulations.

The ‘greening’ of mining – through adherence to the techno-institutional norms – is however possible.</td><td>As natural conservationists, indigenous peoples avoid environmental degradation on their land by practicing non-extractive livelihoods and by protecting their environments.

Where there are environmental and social negativities from mining, these are caused by non-indigenous small-scale miners practicing illegal mining in – or around – their titled villagers.</td></tr>
<tr><td>2. Formal institutions</td><td>Existing formal property boundaries demarcating ownership, control rights, and environmental responsibilities, are to be clarified and defended.

New regulations – on administrative, safety, and environmental issues – define the standards for legal mining.

Technological solutions to identified problems are being promoted.</td><td>Indigenous peoples can apply for their titled land through the Amerindian Act.

If a titled village wants to invite a miner onto their land, there is a process laid out in the Amerindian Act for this.</td></tr>
<tr><td rowspan="3">3. Mechanisms of change</td><td colspan="2">Formal institutions provide a legal-institutional framework that both denotes ownership over and responsibility for mining activity and protects those outside from negative impacts of activity taking place inside property boundaries.</td></tr>
<tr><td>Once equipped with education and once aware of the availability of technology and the consequences of rules, miners will change their practices.

For those that do not comply, a bolstered compliance unit will enforce and punish transgressions.</td><td>The compliance unit will enforce boundaries and the new rules and regulations.

As well as offering protection from mining activity, village titles enable villages to access funds and participate in future REDD+, FCPF, and FLEGT activities.</td></tr>
<tr><td colspan="2">Once illegal mining is stamped out, positive ‘green’ outcomes will be achieved.</td></tr>
</table>

Source: Author

5.4. Conclusion

In answering research sub-question two, this chapter has identified the waves of mining reform over the past two decades in Guyana, showing how they have been strongly driven by globalizing norms and external actors and narratives. As with the mainstream ASM storyline identified in Chapter 2 – and as per Adger et al.'s (2001) characterization of the hegemonic Global Environmental Management approach – the agenda is strongly institutional and technocratic in nature, placing faith in the calibration of the formal rules to punish transgression and incentivize better behaviour. The state is tasked with ensuring mining stays within the designated boundaries, both spatial and technical.

Although strongly influenced by external discourses, the Guyanese articulation of reforms has however also been strongly shaped by the national political ecology of mining that was examined in Chapter 4. Indeed, as Guyana's mining sector has been well formalized for some years, the majority of the reforms represent a *consolidation* of formalization logic, with regulatory and technological measures aimed largely at trying to re-shape the way mining is practised. While extensive new titling schemes are not, as elsewhere, necessary in this case, the state has nonetheless invested resources in clarifying and policing the integrity of existing mineral property rights and clamping down on incursions of 'raiders' into other private titles, indigenous villages, and national parks and protected areas – a phenomenon that has increased in recent years.

Despite Guyana's rhetorical adherence to the mainstream ASM storyline (and its underlying notion that a 'cleaner' version of small-scale mining is ultimately *possible*), for many local miners, the introduction of increasingly strict requirements betrays a desire on the part of the state to phase out the small-scale sector. To this end, groups such as the GGDMA, which have been previously successful in staving off new attempts at environmental regulations, have remained strident in their protests. Following the departure of the PPP from government in 2015 – and, with it, their influence on the policy agenda – the GGDMA has however had less success in recent years in resisting reforms. Overall, the increasingly exclusionary nature of reforms – and the disproportionate burden being placed on smaller operators – appears to meanwhile illustrate how 'green' rationalities can have repressive outcomes for many land users (Cavanagh & Benjaminsen 2017).

Amerindian groups, such as the APA, have on the other hand decried successive governments' approaches for failing to secure or protect the rights and livelihoods of indigenous villages while also failing to properly enforce the wealth of new well-meaning directives that could have mitigated the social and ecological impacts of mining, illustrating that the reform agenda's 'win-win' rhetoric masks the ways in which it may reinforce existing – or create new – losers. On Amerindian lands, where dominant narratives continue to frame Amerindians as victims of mining (a notion that will be thoroughly problematized in Chapters 7 and 8), policies have focused on trying to help villages secure tenure rights, while providing them with non-mining livelihood projects. As will also be seen, as well as the fact that such policies are characterized by extreme delays, they are rarely effective in securing the intended rights and protections.

Across three case studies, the next three chapters will examine the ways in which the reform agenda identified in this chapter interacts with three contrasting institutional, geographical, socioeconomic, and cultural settings within Guyana's mining landscape. It will ultimately aim to identify the ways in which the realities at these local scales challenge – or confirm – assumptions that underwrite the reform agenda.

Chapter 6: Landlordism and the socio-ecology of green mining in Potaro

6.1. Introduction

This chapter takes the form of a place-based case study of mining reform on State lands in Guyana's Potaro Mining District. This case study will aim to offer insights into the Guyanese articulations of the national political-ecological phenomena that are misread, over-simplified, or overlooked within the components of the storyline explored in the previous chapter. As well as examining the under-acknowledged dimensions mediating the effectiveness of reforms in this context, it will also explore how different actors at the local levels experience and feel the effects (or non-effects) of reforms, and how well (or not) the approach responds to what they feel are their core grievances. It will begin by exploring the debates around landlordism in the mining sector before examining the relevance of these debates to environmental reforms. It then will analyse the government's new syndicate policy, exploring its potential benefits and limitations for both miners and the state in the context of socio-discursive contestation and socio-ecological dynamism in the mining landscape.

6.2. From land inequality to 'landlordism'

> Gold thicker than blood… this is not pork knocking anymore, it's an industry… (Interview 142)

Over the past 50 years the small-scale mining sector in Guyana has evolved from hundreds of bands of independent pork knockers[60] roaming the dense, dangerous, and sparsely-populated jungles of Guyana for weeks on end, to thousands of organized, structured, mechanized production units that are today rigidly mapped and monitored. For the pork knockers old enough to remember how things used to be, such a transformation has come as quite a shock. And it seemed to be these miners – largely Afro-Guyanese men whose lives on Guyana's Atlantic Coast were such distant memories that they considered themselves as dwellers of the interior – who were the most vocal in

[60] An independent gold prospector.

decrying the new reality of landlordism in the restaurants, bars, and clubs in landings[61] of Potaro Mining District when I arrived in Mahdia, the District's main town, in 2016.

While inequality in the mining sector in Guyana has been known about for many years, it appears to have been treated as something of a natural law. Indeed, as early as the mid-1990s, GGMC officials were well-aware of the control of the sector by just a few large miners-cum-landowners[62] (Colchester 1997). At that time, however, it was considered a function of the capital scarcity in the country that meant that only a handful of businesspeople could afford to become significant investors in emerging and expensive land dredging activity. However, by the mid-2000s, when Lowe (2006) and Thomas (2009) explicitly refer to a problem of 'landlordism' – effectively, a landlord-controlled mining sector – they touched on a more politically-charged issue. But when and why did land inequality become negatively associated with the term 'landlordism'?

6.2.1. The politics and morality of land acquisition

Despite the apparently long history of rentier arrangements in Guyana's gold mining sector[63], what is distinct about attitudes to contemporary trends is both the perceived illegitimacy of the accumulation of properties and the set of ensuing material conditions that have stemmed from it. This section will examine these political and moral aspects.

6.2.1.1. Politics

In discussing the current state of land concentration in Potaro, it was common to hear small-scale tenant miners decry what they saw as corruption and favouritism in the distribution of properties. As one complained:

> … The previous government give all the lands to the millionaires… and the millionaire people now, they does exploit you… They get all the lands, they holding it up, they not working it… but they hold it up (Interview 136)

[61] A commercial centre servicing a mining area.
[62] According to Colchester (1997), GGMC Commissioner, Brian Sucre reported that the top ten local companies extracted about 60% of the total declared gold production.
[63] Bulkan and Palmer (2016, p. 7) argue that "landlordism … has a long history in Guyana, first appearing in mid 1890s when large local investors began to desert the industry in the face of tougher mining laws", enabling foreigners to buy up and control multiple claims.

Several miners interviewed even claimed to have been present when this process of land dealing was going on between "the big ones" and senior government officials behind closed doors. As one explained:

> The best part of the land… They put it into the auction… And these bigger guys… if I'm buying something, I gotta know what I'm buying… So, they go to the office there, and they get this same miners, this same Mines Officers… to give them information… because they already do certain prospecting work… (Interview 133)

In 2015, the GGMC itself acknowledged the "pervasive perception of corruption, perceived lack of transparency and a low public image of the Commission", even admitting that these perceptions were somewhat justified, stating that "the granting of specific requests for Closed Areas … is not always the subject of clear and transparent justification" (GGMC 2015, p. 2). It further acknowledged that its own internal practices had enabled powerful miners to hold onto properties for multiple years "by not cancelling certain Mining Permits even though the low rental fees were not being paid for them" (ibid., p. 30).

While such behind-the-scenes manipulation of property distribution has become increasingly acknowledged – and the public availability of GIS data on property ownerships has confirmed suspicions that miners have held for many years – at the ground level allegations of more strong-armed methods of property accumulation are also pervasive. Many miners reported, for example, that properties they have held (invariably those on which significant gold deposits have been subsequently found) would sometimes mysteriously disappear from official records only to reappear in someone else's name in a later edition of the gazette. A female smaller-scale miner articulates this and other experiences:

> … I can apply for a place on the 11th… And they'll tell me that the area isn't open, it's closed… And then you go back one month after, and you see a larger miner apply for the same place and got it! Or, I already own my land… My land is owned, my land is paid for, it's verified… And then when I go back to pay for it, it's in somebody else's name… Or another man come and he has papers for my place, and he's telling me that I have to move… And, I'm served a cease work order, and that other man whose illegally mining… who somehow mysteriously get papers, is working out here awhile… while GGMC takes forever to sort a problem… By the time they sort it out, my land is no more… (Interview 34)

Large miners associated with the GGDMA (who appear to have been the main beneficiaries of increasing property expansion) predictably defend their acquisitions, contending that they have accumulated their properties legitimately with the aim of investing in their families' futures, while reasonably stressing that there is a rational economic logic to accumulation:

> You have a family, mining's your family business… The mining… this land get worked out over a certain period of time… you must have reserves… Right? (Interview 20)

> The larger area you got the greater is your chances of being able to work… It's greater your chances, so you take the risk… It's like buying a penny stock and holding on to it… And as you hold on to it, you're hoping it will take off some day… (Interview 142)

In responding to miners' claims of impropriety, they claim that many of the miners who are complaining are not responsible or organized enough to be able to manage their own mining businesses, and where they have held properties, they have had to release them as a result of poor management, profligate spending, or occasionally – they concede – poor luck:

> You get a lot of gold, right, and when you get a lot of gold, you buy a 4 by 4, you wear a 20, 40-ounce chain around your neck, you party all the girls, you perhaps build a big house… But, we have a saying in the industry that says, that 'you work for the money first, and you get it after'… Or, you go in the industry and you don't have luck, but because you stay in it like the lottery thing, you will have a ticket you will have a chance… Somewhere along the line, either by shrewd management or you would have developed, or by luck or by sympathy, you get some gold (Interview 142)

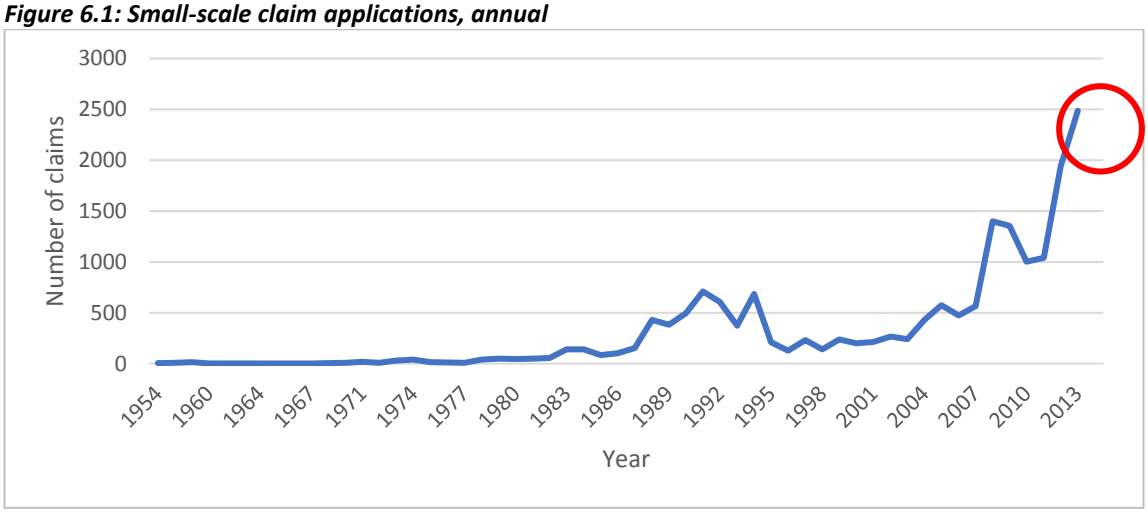
6.2.1.1.1. Revealing trends

While property accumulation by larger miners may well have been purely connected to business acumen, it is important to understand why it has become increasingly perceived to be connected to political favouritism. Bulkan and Palmer (2016), for example, explicitly link the distribution of properties to political patronage, and cite Lemel (2001, p. 3) who observes that "a more general reality needs to be recognized, namely that in Guyana, politics, economics, ethnicity and access to land are all entangled to form a complex and often volatile mix." Bulkan and Palmer (2016, p. 7) thus attribute the distribution of mineral properties during the latter years of the PPP/C government to the fact that they "did not succeed in exerting total control over the majority African, Portuguese and Mixed members of the GGDMA" and thus had to circumvent the power

of the GGDMA to some degree "by allocating mining concessions to its supporters and supporting new associations."

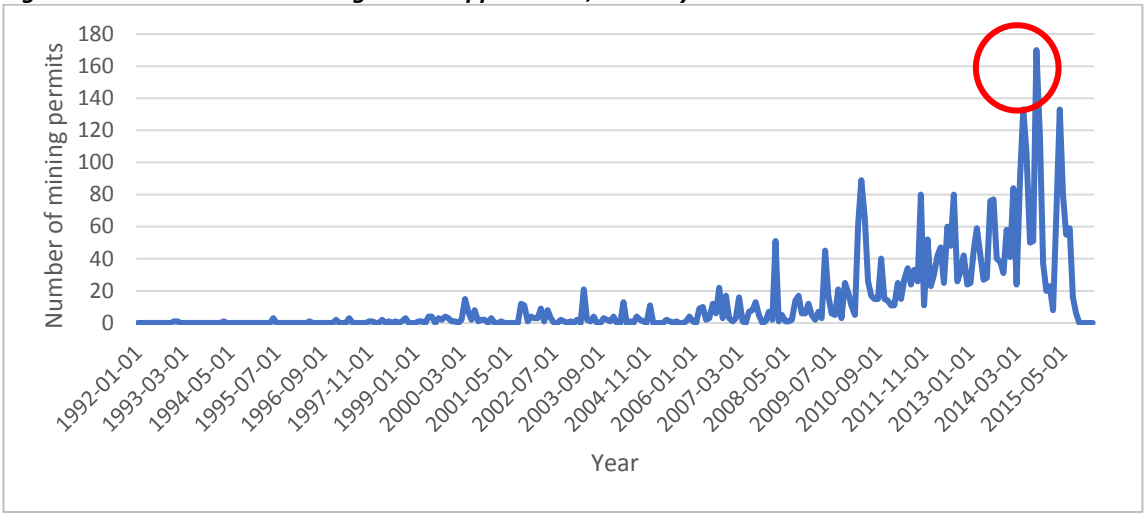
A review of Figures, 6.1, 6.2, and 6.3 showing temporal small- and medium-scale property applications suggests that acquisitions during 2013-4 may indeed have been closely connected to national political events, as there was a clear spike in property applications in late 2014 (highlighted in all graphs) at a time when the gold price had conversely dipped, new dredge applications were down, and total licensed dredge numbers were also falling. Several interviewees suggested that the rush for properties at this time was an attempt by businesspeople close to the ruling party at the time to 'lock up' land in anticipation of losing the patronage networks at the 2015 election that had been secured through connections to the outgoing PPP/C government. One striking statistic, illustrated in Figure 6.3, is that 1,100 PPMSs were given out in September 2014, shortly before Parliament was prorogued, and just when it became clear that an election was likely in 2015 (Stabroek News 2014c). President Ramotar eventually announced the election date of 11th May 2015 on 20th January 2015 – an election he would lose.

Figure 6.1: Small-scale claim applications, annual



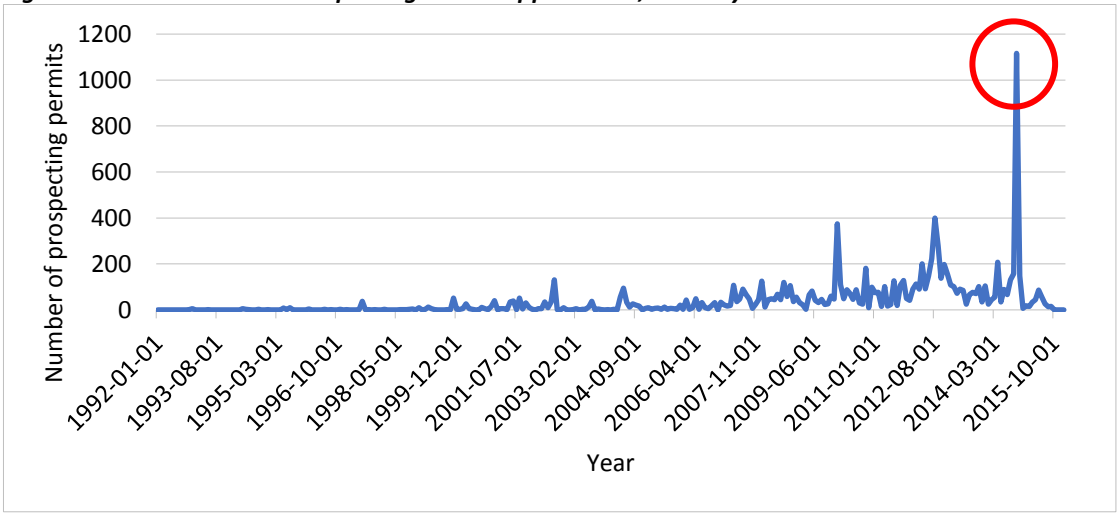
Source: Adapted by author from GGMC document listing total claims in existence as of end of 2014 and their dates of application. Accessed at http://ggmc.gov.gy/main/sites/default/files/Documents/ExistingClaims2014.pdf

Figure 6.2: Medium-scale Mining Permit applications, monthly



Source: Adapted by author from spreadsheet data containing list of all Medium-scale Mining Permits in existence as of March 2016 and their dates of application. Original file downloaded from http://data.gim.gov.gy/

Figure 6.3: Medium-scale Prospecting Permit applications, monthly



Source: Adapted by author from spreadsheet data containing list of all Medium-scale Prospecting Permits in existence as of March 2016 and their dates of application. Original file downloaded from http://data.gim.gov.gy/

6.2.1.2. Morality

Even if the accumulation of land was not illegal, for some, the level of inequality nonetheless represents a moral concern[64]. For Bulkan and Palmer (2016, p. 7), the reality of land concentration indicates that there has been a process of "*de facto* privatization of

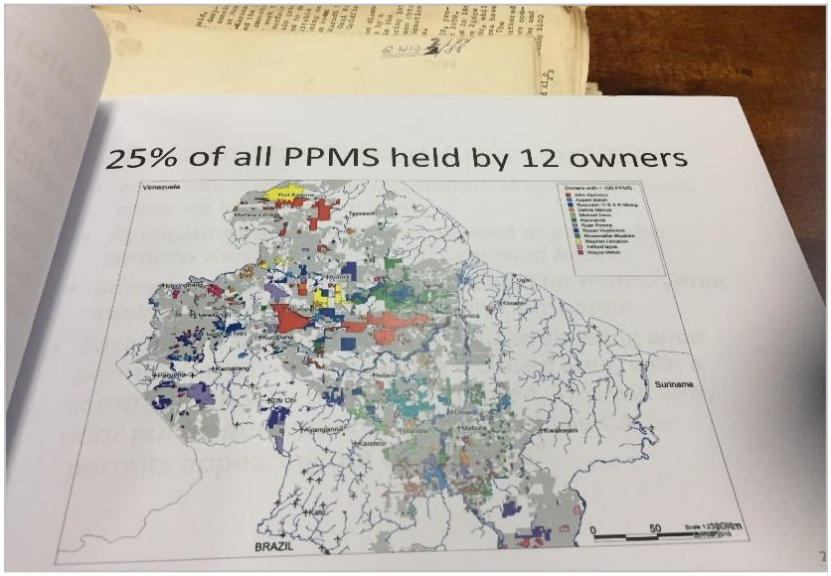
[64] Not for all though: although the IADB (2015) study acknowledges that the inequitable tenure structure is the biggest current problem for the sector, it sees it as a problem of 'inefficient' occupation of lands, whereby locked-up land stifles market supply, rather than an equity concern.

public lands and the socialization of the environmental and human costs of gold mining." Indeed, considering the dominance of the larger landowners within Guyana, it is tempting to think about them as an 'alternative' or 'parallel' state that has effectively privatized State mining lands.

Bulkan and Palmer (2016, p. 3) argue that the inaction on this issue within the GGMC has led the Mining Act (which was crafted to make the sector accessible for poorer citizens) to have perversely "facilitated the rapid expansion… in concession holdings by a small clique of domestic investors (who then set the terms of rentier transactions with foreign joint venture partners or with Guyanese rentees or 'tributors')." They argue that the mining lobby, through the GGDMA, has "successfully resisted any changes in policies or procedures that sought to cap the number of concessions that could be held by one person or company or end the practice of automatic renewal of concessions annually" (ibid. p. 8).

Official attitudes to this situation were laid bare in 2015 when a leaked internal GGMC report made its way into the press (Stabroek News 2015b). In the report, a senior GGMC official labelled the allocation of mineral properties by the GGMC over the previous decade (that had enabled a cartel of landowners to take control of the majority of mineral-bearing land) as "scandalous" (GGMC 2015, p. 7). The page from an official GGMC PowerPoint presentation in Image 6.1 illustrates the extent and public nature of these discussions.

Image 6.1: Photo of a GGMC presentation on land concentration



Source: GGMC presentation

Nonetheless, GGMC officials questioned on the issue, while appearing conscious that an undesirable level of inequality had emerged, appeared reluctant to intervene in the market by engaging in anything approaching redistribution (Interview 87). Others made the point that even if *all* properties were 'wiped from the map' and a quota system on the number of properties an individual could own were to be introduced, the wealthier individuals would still find a way around it, by using multiple names and family members to accumulate properties (as they do now) (Interview 141).

6.3. The implications of landlordism

The level of land concentration not only has political and moral dimensions; it also has practical socioeconomic implications for landless small-scale miners (the one-dredge owners identified at the end of Chapter 4 as the main people doing the mining) and for the prospects of 'green' mining. This is because the shortage of land has closed off the official route for accessing land, leaving miners with no choice but to find a position on someone else's property under much more competitive and insecure conditions. The large demand for land and the large supply of prospective tenant miners has meanwhile enabled landowners to become increasingly exploitative in setting the contractual terms with tenant miners, creating stressed and uncertain conditions for the landless miners. These two interrelated dimensions will now be looked at in turn.

6.3.1. Diminishing access to State lands

At the beginning of the 2000s, land was available in the Mahdia area of Potaro Mining District for those who cared to apply – through applications, auctions, or lotteries. However, many miners would often take on informal positions on other people's land *by choice* (so as to avoid the costs and effort of regularizing). Most declared that they had been able to find a position with ease. A typically romanticized evocation of that period is recounted by a miner from Mahdia:

> In pork knocking days… it was the same system they using now… What we used to do… Just prospect in the bush and find and start work… Claim holder come… Say this is my claim… He would say 'no problem, pay the percentage'…(Interview 80)

Today, the picture is much different – one of land scarcity that is both real and artificial.

6.3.1.1. Real scarcity: expanded demand

Land scarcity is real because the rapidly expanded demand for mining properties that was documented in Chapter 4 has meant that accessing lands to work on through the GGMC is no longer an option. As Bulkan and Palmer (2016, p. 6) note, "the unsatisfied demand is demonstrated by the fact that the Land Management Division 'receives 200 to 250 new applications for medium-scale properties on a monthly basis.'"

The degree to which land has become progressively 'locked up' during the past two decades in the Potaro area can be dramatically illustrated in the following time-series GIS maps in Figures 6.4 to 6.7 of mineral property layers. In the maps, the different coloured blocks represent the properties that were in existence in the selected years[65], with orange properties representing the medium-scale category.

[65] Note that properties that were *not* in existence in 2016 but that *were* in existence in the selected years would not be included in these maps. However, as relatively few medium-scale properties are abandoned each year, the accumulated picture in the time series maps is fairly reflective of the number of properties in existence for each year. All maps are GIS layers adapted by the author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

Figure 6.4: Mineral property distribution in the Potaro area in 1999

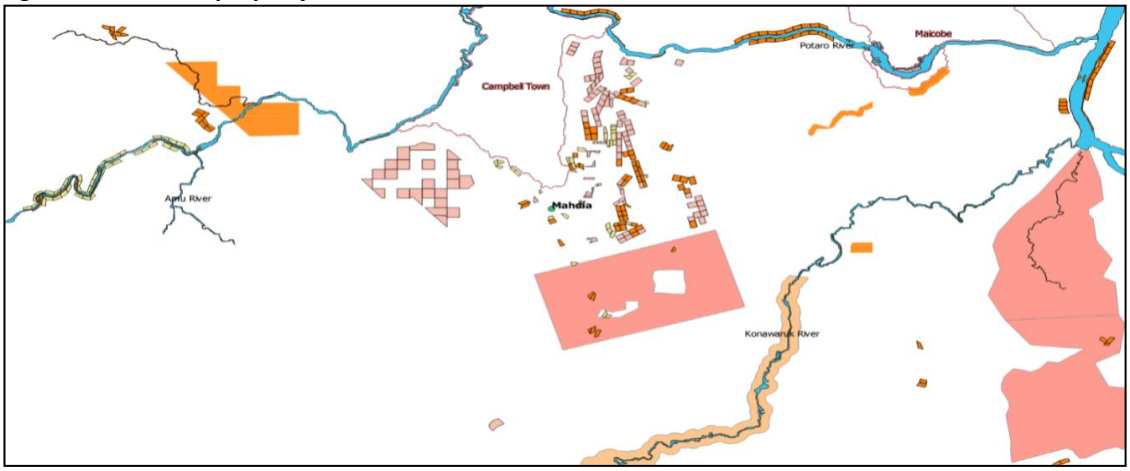


Figure 6.5: Mineral property distribution in the Potaro area in 2005

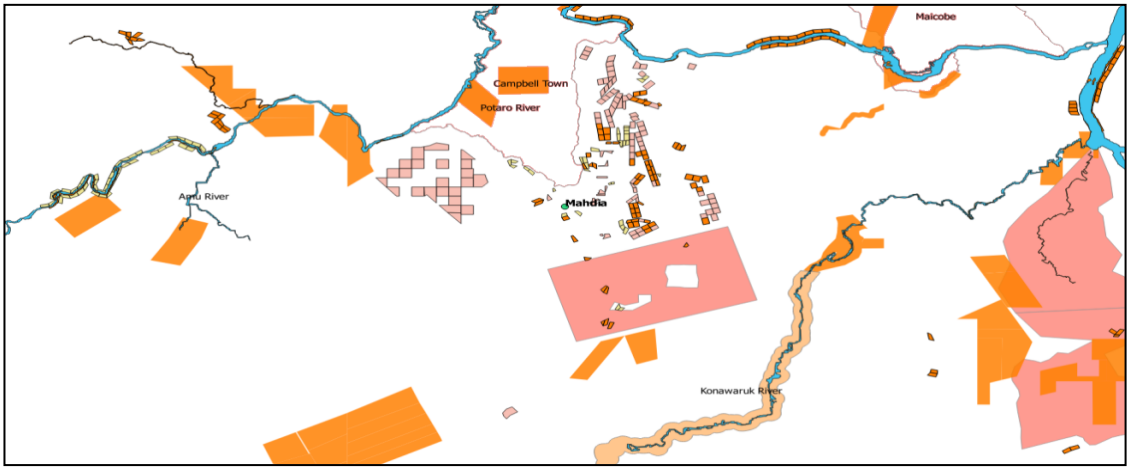


Figure 6.6: Mineral property distribution in the Potaro area in 2010

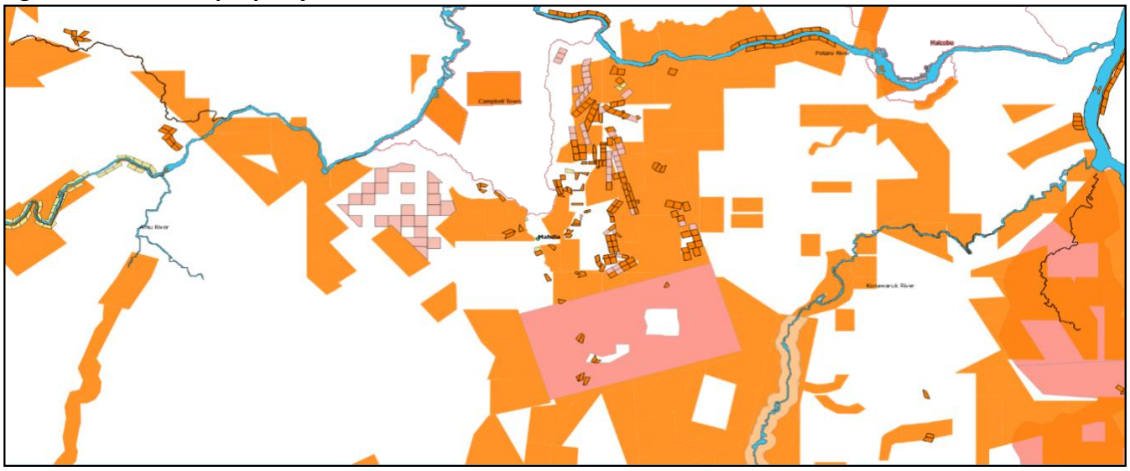
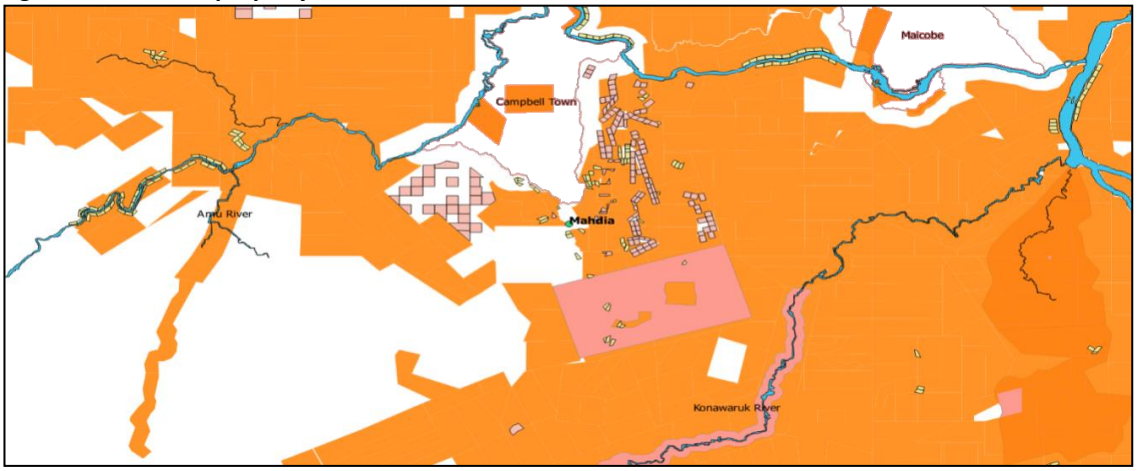


Figure 6.7: Mineral property distribution in the Potaro area in 2015



This supposed lack of 'space' for new mining applications today recalls Spiegel's (2016) observations about Cambodia's mining lands, which had been given out to large-scale foreign companies, leaving little remaining 'space' for smaller miners who wish to practise the state-approved version of responsible small-scale mining. But whereas the lack of available space in that case was a result of state policy, in this case it is being driven by market transactions. As a senior GGMC official conceded:

> There is not enough land… for example, in Mahdia… not all of this land need to be unavailable for mining! We've prepared this area here for a lottery, but it's a Closed… It's Closed… It's still a Closed area… But, the problem, if you only make it open State land, those that have the money… those persons that are able… will sweep it up… You follow? (Interview 87)

Where 'proven' lands – about which there is some indication of minerals – do become available, they are typically sold in auctions, where, as was explained in Chapter 4, the price is too high for smaller miners to compete. Lotteries occasionally yield success for smaller miners, but the land 'won' is often remotely located with no infrastructural connection, and often proves barren. For smaller miners, these experiences drain resources and worsen land inequality as these miners are then forced to sell their properties on. As one explains:

> Lottery doesn't work, cos you're just putting a man in the bush… give he a coordinate, he gotta find the land, he gotta be putting infrastructure, he gotta do whole different things… It's a lot of money… for a small man… And when you sell it… Right? And then now… when the small man sells it to the bigger man, the other small man gonna say, the big man them get all of the land… But it's the small man who sells the land (Interview 78)

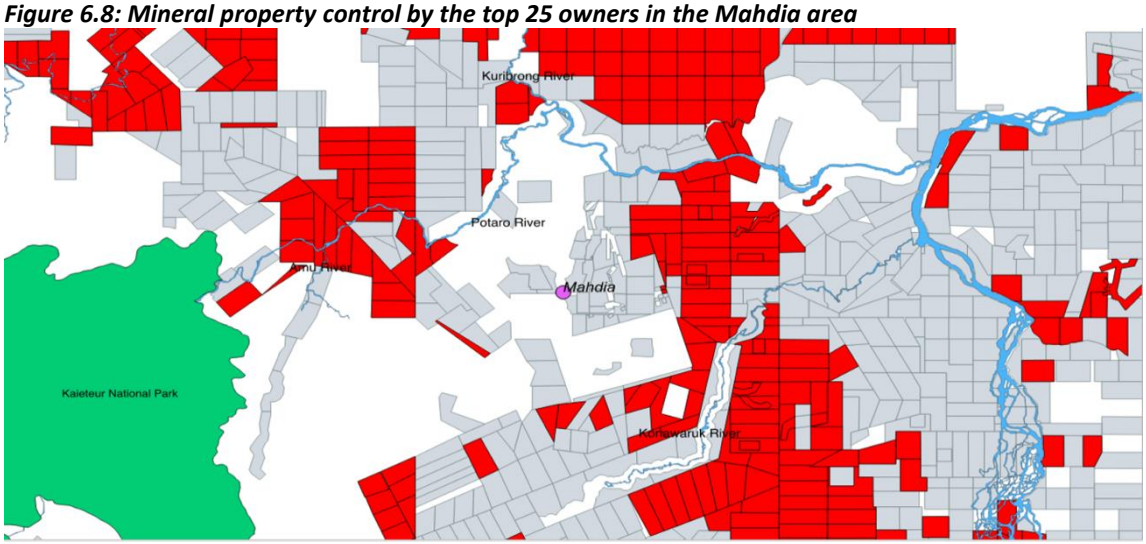
6.3.1.2. Artificial scarcity: re-shaped land access

While the land shortage is real, it is also artificial, in the sense that a growing amount of the 'locked up' land, as was explained in Chapter 4, is being 'unproductively' held – in contravention with the GGMC's principle of 'beneficial occupation' that the staggered rental fees are supposed to encourage.

A glance back at Figure 4.26 showing small-scale claims, medium-scale mining properties, and large-scale licences confirms the extent of this speculation, illustrating that a large proportion of the mineral properties are only *Prospecting* Permits (PPMSs) that have not yet been converted to Mining Permits (MP). Invariably, these are the blocks that are further away from road and river infrastructure, and thus are more expensive to access and mine.

As with the picture nationally, the Potaro area is characterized by high levels of land concentration, with just a handful of landowners controlling a significant proportion of the land. Figure 6.8 shows the Mahdia area of Potaro, where grey blocks are current mining properties, and the ones shaded red are the mining properties controlled by the 25 largest landowners.

Figure 6.8: Mineral property control by the top 25 owners in the Mahdia area



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

While many miners are resentful at how land has been locked up in this way, others are more philosophical:

> His son can own 500… and his son's son can own 500… and his nephew can own 200… and his mother can own 200… But what… there's no law stopping the man from doing that… We are capitalist state, and he can do what he gotta do… If that man chose to buy blocks instead of going and have a woman in a hotel, or a three women in different houses… then it's good for him! (Interview 135)

In a practical sense however, the locking up of lands is pushing miners into tributing by necessity, strengthening landlords' control over land access:

> For you to get lands that is good, you have to go really far out… right? Far from civilization… Now, for you to do that, you gotta have a significant amount of capital… cos, just to mobilize your equipment to go there… Let's say, one operation… you gotta have at least… 10m dollars… 50 or 60,000 USD… just to move to get there…Now, the best prospecting is done with either a drill, a power drill or something, or an excavator to drill and go down… Now, sometimes you spend all that money and you reach there and there's no gold… So, I, personally, prefer to sign a contract with you that has a good claim… pay you 10%, and I work… I don't have a problem with that… (Interview 135)

6.3.2. The normalization of the 'tributing' route

Unable to access accessible land through the official state channels miners are then forced into attempting to 'get a position': essentially, entering into a private contract with a land owner. In practical terms, miners reported that they would find a position through 'word of mouth' research:

> Everyone work for gold by word of mouth… 'Oh, I know a place, bai[66]… I been working there and I see this place and I got to carry you in and show you this place…' Or, 'I know a man', and then you spend money to find this man and you bring this man and you buy two beer for him and you sit down and you talk… And he'll carry you and show you this place, and then you go and…10% is true, and the rest of it is… So, a lot of miners get caught up in that… (Interview 135)

The 'word of mouth' nature of 'getting a position' has typically been seen as a modality that benefits both the landowner (who is free to break the contract, or vary its terms, at any time) and the dredge owner (who is saved the inconvenience of going through the official application and registration channels that often involves expensive trips to Georgetown).

[66] A colloquial term for 'mate' or 'friend'.

But while such a process was seen as uncontroversial (illustrated by the quote at the beginning of section 6.3.1), it appears that the normalization of the tributing route – as the sole remaining method of accessing land amidst rampant land competition – became more problematic in the 2000s. For Bulkan and Palmer (2016, p. 683), this was partly a result of the fact that the Mining Regulations (1972) concerning lessees and tributors (contractors and their workers) did "not impose any technical obligations on either the rentier or the contractor and afforded no security of tenure to the contractor." This pervasiveness of the 'word of mouth' arrangements between landowners and miners led it to become a source of abuse, exploitation, conflict, and violence in the interior. As a result, in the early 2000s[67], the GGMC sought to regularize the process. Indeed, as IADB (2015) notes:

> The Mining (Amendment) Regulation 2012 seeks to regulate further the relationship between claim holder and renter by recognizing renters as "independent contractors", providing for written agreements between parties, prohibiting a renter from making agreements with two claim holders simultaneously for the same gold producing equipment, and providing that the claim holder shall not interfere with the work of the renter; and management and responsibility in exploration, mining and quarrying.

As part of this newly-regularized process, the landowner, dredge owner, and Commissioner of the GGMC are all supposed to sign an official contract outlining the terms of contract and other official information such as registration numbers. However, many miners reported that landlords often still refuse to be bound to written contracts, instead preferring to allow the miner – at the prospecting stage – to come onto the land under a 'word of mouth' agreement. This puts landless tenant-miners in a weak and vulnerable position vis-à-vis the landowner, as a GGMC officer explained:

> Because landlords encourage miners to break the law…work without documents… because they want to help them, or because they want to put them in a situation where they can exploit them… With no paperwork they can be accused of raiding if anything goes wrong… (Interview 68)

For my conversations with miners District across Potaro, the institutionalization – and normalization – of the tributing route appears to be having two main consequences, elevated costs and tenure insecurity.

[67] It was not possible to get a definite date on when the requirement for a written contract between lessee and tributor came into force, but the consensus year seemed to be around 2003.

6.3.2.1. Consequence 1: Elevated costs

The financial costs of accessing land through the landlord-tributor system vary wildly, but as a rule, they appear costlier than accessing land through the state – a process that was documented in Chapter 4. While the percentages charged by landowners were reportedly more reasonable in the 1990s, this changed as the gold price rose in the 2000s and more machinery came into the interior: once gold could be extracted more quickly, the stakes became higher. This created problems for both miners, who were being asked to pay higher fees, and landlords, who increasingly became unable to monitor all of their properties. As one miner explains:

> Because people realised that more machinery is coming in, everybody is craving for the gold, because the price… the price is up away too, you know… When the gold price was jumped up, to this $300 and them kind of price… a lot of people come into the mining industry… right? And… eventually… them landlords… they then take a lot of pressures… (Interview 133)

According to small miners, the contract terms today depend on the "greed" of the landlord and can be anywhere from 10% to 30% of the gold produced. Some landowners alternatively ask for a flat-rate monthly rate fee, typically of around GY$400,000 (US$2,000). Such flat-rate fees can be more burdensome for the dredge owner as they demand a regular monthly payment, whether the mine is producing gold or not.

In addition to these monthly fees, some landlords also ask for lump sum 'entry fees' to the property, and additional lump sum payments to bring on earth-moving equipment. These can be as high as GY$2m (US$1,000) per piece of equipment. Other landlords reportedly demand that tenants buy supplies or diesel purely from them – typically at inflated rates – so that, if the miner is not extracting gold, the landowner is still making money.

Typically, then, as can be seen in the table below, servicing even the most basic tributor contract would be equivalent to around a minimum of 17% of gold production, compared with around 7% via the GGMC route. This is even before extra fees for earth-moving equipment or supplies are added.

Table 6.1: A comparison of mining costs between GGMC and tributor routes

	GGMC route	**Tributor route**
Rental	GY$1,000 (US$5) per year	10% of gold production to landlord **PLUS** GY$1m (US$5,000) land entry fee **PLUS** Rental fees per piece of machinery (GY$1m +)
Royalty	5% tax 2% royalty	5% tax 2% royalty
Total	7% of gold production	17%+ of gold production

Source: Author's calculations

When questioned on why they accept such onerous terms, many miners interviewed claimed that they have no choice: it's either accept the conditions or don't work:

> We still accept if a landlord is there, this is his land, and we're going to mine it… we need to go and mine it… so we need to pay… (Interview 133)

While some tenants interviewed repeatedly attempted to cast landowners as unreasonable for demanding excessive percentages and monthly rates, the picture however appears more complex. Landlords claimed for example they have been driven to raising their demands as a result of repeated experiences of being cheated out of gold by miners who were under-declaring what they had extracted. They thus began raising their percentages to put off miners who were "not serious" or asking for flat-rate fees to ensure that they received a stable income that was not dependent on the integrity of miners' declarations. For landlords, the range of risks they face means that they have no choice but to err on the side of caution, and the worse the reputation of the miner, the more difficult (and costly) the landlord will make it for them to come onto the land. As one landlord explains:

> Once you decide that… you know somebody… you know that they're not a good character but you're trying to work with them, so you let them go on, right? But what… When you allow them to go on, you have to monitor them… You have to be more serious with them, you have to be less accepting of what they tell you… All this is trying to mould them into something trustworthy… but very often they don't see that… Very often they see it as you attacking them, as you not wanting them to have anything, as you wanting to have everything (Interview 142)

The remoteness of most mines and the impossibility of monitoring multiple tributor operations from afar (most landowners live on the coast, typically in Georgetown) means that most landowners have to hire a 'ranger' who will patrol their properties, checking tenants are recovering the amount of gold that they are claiming. Complicity between

tributors and rangers is not uncommon though, and arguments over declarations and percentages frequently result in violence[68].

6.3.2.2. Consequence 2: Insecurity of tenure

As well as the variability and onerousness of the costs of accessing land through the tributor route, miners who have accessed land this way frequently face tenure insecurity. The most common claim made by miners is that they are often prematurely thrown off from the land they have paid to work on once they bore gold, at which point they are swiftly informed that they are in the land owner's "bedroom", and need to vacate:

> Almost all over the country's taken up… by the bigger people, right? So, to mine, you have to get permission… some of them don't give permission, some give… And then… they… the more prosperous areas… if you find, like, a nice deposit of gold, they tell you to move off and they work it themselves… (Interview 64)

For many miners interviewed, this effectively consigns them to the role of a 'cheap prospector' whose purpose is to help landowners find gold on their land. For this reason, landlords allegedly prefer tenants without excavators because those with them may extract the gold too quickly, leaving nothing for the landowner should they later move onto the land. One landowner even endorsed this characterization and defended it by suggesting that small-scale miners' technical methods – and their economic desperation – made them suitable for the role of prospection:

> They're prospectors! But the prospecting is done, not as a purpose, it is done out of necessity… It is done out of the size of equipment they have… gives them the ability to move… it might be a strategic thing to have people… without excavators… because… they're… Because with having a bare dredge, you're more desperate to find minerals… How would that be wrong as commercialism? (Interview 142)

The notion that expulsions are routine or unjustified was meanwhile dismissed by many others – both land owners and miners – who blamed some small miners for either leaving themselves vulnerable by failing to fulfil their necessary responsibilities or by being deserving of expulsion as a result of cheating the landowner out of gold:

> This is why I show you the miners aren't serious, because the miner got to know… you can't really work word of mouth… You got be serious and… this is the part that miners really ain't coming to grips with… Cos enough of them come and tell me, say 'man, we get stopped here'… And the first thing I asked him, 'you all got

[68] In Mahdia, for example, during fieldwork, a miner guarding the mats overnight was murdered by two workmates, who ran off with the mats and the gold (Kaieteur News 2017b).

> privilege? You all got permission fuh work? Was it? Cos if you ain't got such things, you're vulnerable! The man will kick you out any time!' (Interview 78)

> The culture of the industry is to know how much gold you're making… So, you say, 'man I boring, making a couple of pennyweight[69]'… So, he say, 'alright, go on'… Then Mr Alphonso find out you're making 50 ounce of gold a week…! Tell me why we don't have the right to get that 50 ounce of gold that you bore on his land in representation to the scale of his investment? (Interview 142)

What was stressed by many smaller miners however was the fact that it is often the very anxiety that they may be expelled at any time if the landowner hears they have discovered gold on their claim (particularly during the prospecting stage) that leads them to feel the need to deceive the landowner or ranger about how much gold they are recovering *in the first place*. One miner explained this paradox as follows:

> I guess people go for the fast money and… I guess some people as well… Maybe this guy before you there… I mean, maybe that guy's had a lot of bad experience with claim holders, and so he just thinks, let me… Before this guy cheats me, let me cheat him (Interview 134)

The pervasiveness of such behaviour however then appears to confirm landlords' worst suspicions about the dishonesty of smaller miners, and it is this dynamic that is arguably driving higher fees and mistrust between landowners and miners. Such mistrust, for some, is impossible to overcome in the interior:

> If I go and produce 100 ounce of gold, and I show you as the landlord, you're always going to feel within your heart like it's the wrong amount of gold that I showing you! And now, you know, you're going to be greedy… I paying you a percentage for 100 ounce of gold … but, just because, you checking my money, you start telling yourself, 'if this man showing me 100 ounce of gold, it's not 100 he making… he gotta making 200…'" (Interview 133)

6.3.2.3. Consequences – doubly squeezed?

Even if the more extreme claims of routine expulsions are discounted, the lack of availability of land has undoubtedly put smaller miners in a weak bargaining position vis-à-vis the landowners. Invariably, this has meant that the terms under which miners are accessing land have become more burdensome than they would have been if they were able to go through the state. This economic pressure adds to the increasing costs of

[69] One pennyweight (dwt) is equal to around one-twentieth of an ounce. At 2018 prices, one ounce of gold was worth around US$1,000, so 1 dwt was worth around US50 (or GY$10,000).

adhering to regulatory requirements. Such a double burden intensifies resentment towards both the state – which has correspondingly re-invested little back into the interior – and the landowners, creating to an increasingly pressurized atmosphere in the interior. One miner explains this twin burden:

> I don't have a problem with the regulations… But you've got to look at the complaints and crying out of the small miner right? For all them years since pork knocking days and they're collecting 10%, and all the time we were crying that we need roads… right? In the bush, them ain't got time… (Interview 137)

The raised mining costs cannot all be absorbed by the dredge owner, and so cost-savings gets passed onto the operational workers (such as the jet man or the marrack man) lower down the chain. This has poverty implications, as these labourers are the lowest paid in the mining economy and are often supporting families on the coast. As one labourer explained:

> Those workers got to pay 20% tax even when you're not making gold… Most of the times you're working on a machine you're paid less, cos the machine is doing the work… Cos they got some people working Mazaruni side, with machines, and them men paying 1,000 dollar or 2,000 per ounce or them kind of thing… If you're making 5%... Then the 20% gotta come out from you, you're left with nothing! (Interview 138)

In Mahdia, during fieldwork, there was already talk about wages for labourers falling as a result of the introduction of new taxes – with dredge owners competing with each other to attract labourers by promising them that they wouldn't be made to pay taxes and register with the Guyana Revenue Authority (GRA). This, of course, would leave the labourers, if the operation was monitored, vulnerable to charges that they were working illegally.

6.3.2.4. Are there environmental implications of landlordism?

6.3.2.4.1. Rising costs:

The increasingly stressed conditions were cited by some miners as a contributing factor in their practical ability to comply with the technical principles of good mine management. Some argued that the added pressure created by higher and more frequent payments to landlords may affect the style of mine management and the budgeting for environmental practices:

> When you go to work his land… because he holding out for that 10%... It's like he is forcing you then… he putting you under pressure… (Interview 81)

Other miners were however sceptical about the significance of the role of landlordism and opined that the *willingness* to comply with regulations was more related to the 'character' of the dredge owner and the *ability* was related more directly to the amount of gold that was being made. Those that were making no gold at all, for example, wouldn't think twice about adhering to regulations:

> If they cut a pit and they ain't get gold, they move and lef it… Nobody don't backfill it! (Interview 133)

It is probably accurate to conclude therefore that squeezed conditions of operation – while not necessarily a driver of poor mining practices – make it *even more unlikely* that miners would be willing or able to comply with 'green' mining requirements.

6.3.2.4.2. Insecurity of tenure

A subtler but significant factor influencing mining practices may however be tenure insecurity. Many miners claimed that the fear of being thrown off from the land at any time dissuaded them from putting the necessary environmental and safety precautions in place before mining. After all, expending time and resources in building tailings dams and ponds, only to be thrown off from the property as soon as they struck gold, is an understandably unappealing prospect. Moreover, many miners reported that the uncertainty of tenure drove them to mine in a more haphazard manner than they would like, cutting corners in order to extract whatever they could before their contract was terminated. As these miners explained:

> You see… when you go for this kind of arrangement, and they say, 'oh you can work, its fine… you know…' Some miners know very well what this arrangement means… So what are you going to do is try and do as much work as is possible as you can … So they don't really care that much about if the trees are all the way off… what we're going to try and do is make a hustle…Because we know we don't have any papers… (Interview 66)

> I think that… you owning your own land, you might put it more into practice…Yeah, you… you put it more into practice because you own this and… you know, and you do mining… you try to do… because it is your land… you're trying to work it clean… work it safe… (Interview 65)

As with high rental costs, it is therefore likely that the ineluctably short-term mentality of gold mining (and its accompanying poor mine practices) is then being *further* intensified by the absence of any tenure stability or certainty.

Despite the apparent importance of these dimensions, however, government and NGO policies and programmes have failed to confront contentious issues such as land inequality within policy approaches – even as they recognize that these dimensions may be powerful determinants of miners' ultimate ability to participate in and adhere to environmental initiatives (Interview 18). These decisions not to confront political issues are largely motivated by an unwillingness among project partners to upset other stakeholders or the state, a scenario which could lead to the project collapsing and any benefits being lost. Such realities illustrate the pragmatic decision-making processes that can drive the apparent depoliticization of policy (Lewis & Mosse 2006).

6.4. Response of the small miners: Syndicates

The claims of exploitation stemming from land inequality are clearly problematic to disentangle. While landlords defend their fees as a response to experiences of being cheated, small miners meanwhile claim that systematic exploitation is immoral and widespread. It was the persistent moral and economic arguments that won over when the new government established a 'syndicate' policy in 2016 that aimed to facilitate land access for organized groups of smaller (and preferably landless) miners (Stabroek News 2017e). The policy was the culmination of a greater degree of boldness and advocacy among smaller miners in criticizing the control of the sector by the more powerful GGDMA members that had grown since 2015 (e.g. Stabroek News (2017a)).

Rather than claw back any of the 'unproductive' lands being held by large landowners, however, the government freed up land (reportedly around 280 square miles) from its Closed Areas reserve, allowing groups of fifteen or more miners who were all compliant with taxes and regulations to access blocks of land (Stabroek News 2017c). During the 'pilot' phase of the project, the amount they could access was initially capped at ten 'blocks' (medium-scale properties) per syndicate, though this drew some ire from small miners in the context of the now-public knowledge that some miners had acquired hundreds (and some thousands) of blocks each (Stabroek News 2017e). The first syndicates began forming in the Potaro district in late 2016, where miners had long complained about land access issues, illustrated in Images 6.2 and 6.3.

Image 6.2: A poster in Mahdia promoting a syndicate meeting

Source: Author

Image 6.3: The first meeting of the Mahdia syndicate in December 2016

Source: Author

The syndicate policy was predictably criticized by the GGDMA for being a political measure aimed at "dividing" miners and merely lending support to "hustlers" – while not addressing wider structural issues such as the poor infrastructure and lack of access to finance (Stabroek News 2017e). Landowners interviewed claimed that the policy, strongly driven by Minister Broomes, was merely a way for her to secure a constituency of support and to weaken the power of the GGDMA by stealth:

> The syndicate was a political move that worked successfully for Madam Minister in coordinating and mobilizing the GGDMA, playing onto the TIP agenda that put her where she is… And so, she using the same strategy to extend it and mobilize miners, to weaken the back of the GGDMA… (Interview 142)

For small miners, such as the group in Mahdia, however, this was finally a way for them to bypass the landowners and have the chance to practice mining in a more cost-effective and secure manner:

> The people with blocks… are top officials… Big dredges… And they don't want fuh see a small man like me rise fuh reach where them get… And most of them are in charge of the GGDMA… Big dogs don't want to look in no puppy direction… Small miners need to come together and get a voice… (Interview 139)

> The whole thing about it… is to find your own mining land… if you don't have mining land, the work is pressure… (Interview 133)

6.5. Beyond land access: enduring small-scale mining challenges

Smaller miners have thus increasingly come to see many of the challenges they face as not *purely* a consequence of the state's regularization drive, but as connected to structural problems such as land availability. However, in spite of the enthusiasm around the syndicate policy, other observers are more sanguine about the prospects for small-scale mining in the context of a range of socio-ecological factors that land access alone may be insufficient in overcoming.

6.5.1. Overcoming individualism

With respect to syndicates, many miners who were otherwise in favour of the development were nonetheless unsure about how it would work in practice. Much of this doubt related directly to the foreseen social challenges within the groups. As one miner wryly put it:

> The syndicate is good… Some of the members are a problem… So… That is why I am sceptical… (Interview 139)

Many older miners remembered after all that syndicates were piloted in the 1970s but collapsed as a result of mistrust and mismanagement. Current members in Mahdia similarly feared that miners could never work together when gold is involved, and that the inclusion of a "certain kind" of miner in the syndicates (i.e. ones who couldn't access land through the tributing system because they had built up reputations as troublemakers) would ensure that the pilot scheme would be unsuccessful. Others suspected that many syndicate members would wait on the results of others' prospecting activities and would only begin mining once gold had been proven.

Appearing to confirm these pessimistic predictions, the main syndicate in Mahdia was already showing signs of schism by April 2017: having enjoyed an enthusiastic and hopeful first meeting in December 2016, mistrust and disillusion had taken hold. One miner summarized the dynamic:

> If I go and prospect a piece of land with my machine, and I'm making 15-20 ounce gold every 4 days, another one of the member's gonna want to come and put his dredge there, and everybody is going to fall in that hole, and there's going to be a big confusion… There are no guidelines… All these things should have been done ahead of time… where all the syndicates should have come together with one or two

> persons, to sit down… make your constitution, and the government should have provided one or two or four attorneys and sit and put this thing together so that these things are laws… and no one person can change it, right? No one person can change the rules… and that hasn't been done… It's done in a haphazard way… It's like a… a fight for yourself… it's a free for all… (Interview 135)

Similar scepticism was also mooted in discussions about planned pilots for group production activities that were aimed at exploiting more efficient recovery technologies. As one miner explained:

> You first have to realise that every miner is a man by himself… And, like the guy was saying… And one guy comes… and we put down this big village centrifuge[70]… whatever it is… and everybody bring their stuff in and then you give them back the gold… And the man bring his stuff and he put it in and get back 5 penny weight of gold, and he hear that the man bring he stuff and he get back 7, and he gonna say… 'Why did he just get 7?' You understand me? So, it takes people to understand the technology… to show them and to prove to them, and to trust it… to get ownership of it… (Interview 142)

6.5.2. Rising standards and minimal support

Reflecting the desperation that many miners felt about getting their own land, syndicates initially agreed with the government to pay all taxes and comply with all regulations. Such a move was criticized by the GGDMA, who saw this as a foolish pledge that would be impossible for the miners to profitably fulfil (Guyana Chronicle 2017a). After all, they argued, when it comes to fulfilling 'green' requirements such as benching and creating tailings dams, engineering capacity and earth-moving equipment would be required. In order to comply with future requirements, mercury-free recovery technology would be required. In the context of this complex of challenges, accessing land may be no panacea. As one pointed out:

> For a small miner, sticking to the regulations… you have to get a machine… Without a machine you cannot do certain things… One of the things with 4-inch is that you can't build tailings ponds… If you go to a new area… For you to prepare your tailings pond, prepare a couple of pits, then you jump out… Then you use that old pit now as the tailings pond, where the tailing going to throw inside…You gotta dig it first… Then afterwards you gotta backfill, burning more drums of diesel… It's like mining twice… (Interview 80)

For some, small miners are simply not prepared for such a regularized system:

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[70] An expensive piece of gold recovery technology.

> The syndicate is a good thing for the small miners… But, the small miners in themselves, is… their own worst enemy… There is no management in the mining industry… Nobody knows how to manage their dredges… Maybe 20% of the miners know what they're doing… as far as paperwork goes… how to manage your dredge… Because, the money you make… If you budget it right, you can get onto the next pit… Lots of guys, they wash down and they're in a club, a bar… and money is gone elsewhere… So, that's one of the main issue… And people need to be trained in those areas… you know? (Interview 135)

As well as a lack of state support, miners have traditionally struggled to access finance as they are seen as a risky prospect. This lack of availability of finance will, for some, seriously compromise their ability to adhere to the new rules and regulations:

> To do the settling ponds you gotta get finance, and the government has set up nothing in place… When they talk about small-scale miner, they ain't prepare nothing fuh we… They only prepare fuh they, cos they bringing in all them laws this year… You now buy an excavator, engine, buy food… You gotta be able to send money to your family… But when you bore down and there's nothing, then you're bankrupt and there's no source of financing… (Interview 137)

6.5.3. Lack of prospecting information

For some, improved prospecting information is at the heart of improving economic conditions for smaller miners. As one GGMC official recognized:

> Land access is always given by miners as a major problem… However, prospecting is just as important, because what are you going to do when you get the land? Some people think enhanced recovery is more important than prospecting, but this overlooks the importance of prospecting, which would inevitably contribute to better recovery… (Interview 48)

And yet, as the IADB (2015, p. 85) states, although "the issue of renting barren lands to miners has been on the Government's agenda since the 1990s, it has not been addressed." Many miners despaired of the vagueness of current information and the costs they incur in burning many drums of diesel in the prospecting process. As one expressed:

> Prospecting is not every hole you bore you're gonna find gold, right? You gotta go and move sometime, days, months… You boring… to pick up a workground, right? But then if you ain't doing anything you're going to feel it, because, remember you're going day after day and you're toiling and you ain't getting nothing… (Interview 133)

Although the GGMC has pledged to invest more in prospecting, miners in Potaro were universally sceptical about the likely neutrality of the dissemination of this prospecting information:

> The thing with GGMC is… they should have a budget to find… to find lands that is proven. But, you know, what would happen to that land? They would give it to some of their friends! Access… is only for certain miners… But if you go with some money… like a million dollar, and ask for some assistance… (Interview 135)

While the haphazard method of mineral discovery drains miners' resources and is a source of conflict between landless prospectors and landowners, it is also one of the major drivers of what the IADB (2015) terms 'needless' degradation. As one miner explains:

> There is no proven scientific way of quantifying alluvial minerals… So, when everybody was saying, because of environmental issues, 'you need to prospect before you mine', there is no way of doing it! There is no way of doing it! It's more luck and chance… Work and prospect… (Interview 142)

Larger mining companies are able to invest in technologies such as satellite imagery and deep drilling, but these methods are beyond most small and medium-scale miners. The state is investing in trying to equip miners with the technology and skills – GPS, map-reading, etc. – through the GMSTI, but these courses are only attended by a fraction of miners. Moreover, even equipped with the theoretical skills, they still require significant resources to set themselves up with the technology and capital to carry out proper prospection, and once on the land, there is still no guarantee minerals will be found, or, if they are, that they will 'pay'. Where a pit does not pay, the area will be left abandoned and degraded.

6.5.4. Increasing remoteness – and depth – of minerals

For others, these social, socio-technical, and financial issues needed to be seen within a broader socio-ecology of mining. According to this understanding, the easily-accessible alluvial deposits – that are both shallow enough to be extractable through lower-grade technology and close enough to landings to keep the costs of operation down – are becoming scarcer. This is both because the land close to landings has been locked up, but also because the past decade of rampant alluvial extraction has exhausted shallow deposits. As a result, miners are having to dig down to depths of up to 80 feet in order to

extract minerals, requiring them to move significant amounts of overburden. These miners convey these challenges:

> The small miners don't find gold now… the overburden is too much for the small dredges… You gotta get… you've got to work there with big dredges… And the small miners don't have those big dredges… (Interview 119)
> In these areas, the land, the majority of the land is very deep, and you have to have machinery… You have to have machinery to move the land… like excavator, bulldozer, and such, right… Now, me being a small miner, I don't have access to these machines, so I have to pay someone who have an excavator to come and dig for me, shelf the land, bench the land, and it's very costly, because I have to pay by the hour… And one hour, you don't do much work… you're here for several hours to do a good job… (Interview 64)

Because of these technological and spatial constraints, most recognized therefore that they would have to travel further afield to 'maiden' areas in order to find their own land, where the associated costs and risks of extraction – transportation, fuel and supplies, security, and difficulties in finding workers – would be prohibitive. As one miner explained:

> They got a lot of lands around, you know… Miners gotta get themselves in order, and… it costs too… they've gotta get finance… The near areas… them worked out, and they've got to go far… So… you know what I mean… If you are not equipped, you have got to drop out… simple as that… Right? (Interview 78)

Early experiences among syndicates in Mahdia exemplify these dynamics. The nine blocks that one syndicate was given, for example, were 'maiden' lands, near the Amaila River, and, as a syndicate member reported drily, they were only accessible "by helicopter" (Interview 133). Moreover, the land had no geological or prospecting information, and beyond being given the land itself, the miners were not given any concessionary access to finance or other inputs such as fuel or equipment.

6.5.5. Declining deposits?

While facing financial challenges in accessing and extracting these deeper and more remote minerals, there are wider doubts about the overall sustainability of alluvial gold mining. Several senior figures within the current government informed me that they believed the majority of the alluvial gold-bearing mining lands in Guyana had already been 'worked out', leaving only hard-rock mining opportunities. This proposition is somewhat supported by the latest (2015-16) deforestation data, which shows that forest loss from mining is falling, in spite of rising declarations. Such a drop could indicate that,

as the type of mining gets deeper, operations spend longer in each location, minimizing 'horizontal' expansion and concomitant forest loss. As such hard-rock gold mining requires the utilization of expensive earth-moving equipment (and, in some cases, crushing equipment) in order to separate the gold from quart-bearing veins, smaller miners equipped with dredges, pumps, and several hundred thousand Guyanese dollars would be naturally excluded from this activity. As a former senior GGMC figure stated:

> The die is cast where small mining is concerned… Because most of the saprolites, and alluvial systems, have been mined! You know? And, even if there is still gold there as I believe there is… it is that hi-tech, centrifugal, non-mercury system that is going to work… So that these thousands of miners like ants all over the countryside is a phase! It's going to end! OK? There used to be 17,000 miners, in 2011, operating, particularly between the Puruni and the Cuyuni… And in the North West district…Now I think there are less than 5,000! (Interview 32)

This idea that alluvial deposits are dwindling was regularly offered by the larger miners as a way of rationalizing smaller miners' grievances, perhaps because this interpretation seemed to partly exonerate them from responsibility for small miners' marginalization: i.e. it is not *their* exploitation that is making life difficult for smaller miners, but rather the natural ecological location of deposits. As a larger miner stressed:

> The industry has moved ahead now to a level where… and it's even worse now with all these new measures that come in… It is going to destroy the whole small man… They don't have the capital… So, while they are crying out to GGMC, give us land that has mineral in it… They won't have the capacity to extract it… the gold! (Interview 142)

Smaller miners – and many industry champions – appeared however to remain optimistic about the prospects for gold, maintaining that there *are* still extensive alluvial deposits left in Guyana to exploit, but that this will require infrastructure, financial and technical support, and – most importantly – access to land.

6.6. The limitations of formal institutions

Having found that a range of complex structural conditions are not only undermining the perceived legitimacy of the tenure structure but also constraining miners' ability to adhere to regulations, this final section will explore some of the specific limitations of the formal institutional framework itself in ensuring that the particular type of mining in Guyana remains within desired boundaries and parameters. Hampering factors will be seen to

include issues of state capacity and integrity and discursive contestation around the framing of the policy agenda. In examining these factors, this section will illustrate how technical debates on issues such as technology and finance are inseparable from more critical debates on the structural and discursive dimensions of mining reform. Moreover, it will show how even highly formalized mining contexts may face enduring challenges in guiding mining towards the desired 'sustainable' ends.

6.6.1. State capacity

6.6.1.1. Policy calibration

Although some have praised Guyana's mining sector for its accessibility for smaller miners, others have begun to recognize that these low fees and fines may be paradoxically contributing to a lax attitude to environmental transgressions (Bulkan & Palmer 2016). Miners admitted, for example, that, in addition to not seriously fearing being reprimanded by an officer (who either would never catch up with them, or could be bought off anyway), the fines were so low that they were not a genuine deterrent. Such institutional calibration seemingly sends the message that environmental infringements are not a serious issue, while the relatively small amount of money collected in fines is insufficient for funding the scale of required land rehabilitation. As one conservation advocate put it:

> Land rehabilitation, my butt! Miners have to lodge a bond of 200,000 Guyana dollars, which is like US$1,000… The last figure I got to do land filling on a small size area was I think GY$4m… So, it's profitable to lose your 200,000 bond and to leave there… What I don't see is that there's a strong regulation where when you forfeit your 200,000 dollars and leave that degraded area… You're still give a new lease in another area to go and degrade… (Interview 15)

Brazilian miners interviewed even admitted that part of the attraction of Guyana to them was that the laws were so generous (and enforcement so lax) that they knew they could operate with impunity. This suggests that Guyana is, in a sense, winning the institutional 'race to the bottom' with Brazil, which has conversely enacted stringent enforcement measures. Pointing to the degradation around his own mining pit, one Brazilian miner admitted that: "if you mine like this in Brazil, you'd be in jail…" (Interview 128).

6.6.1.2. Inherent informality and short-termism

As was illustrated in Chapter 4, Guyana's land area is a mosaic of formal mineral properties, and it has one of the most established ASM structures in the world. In spite of this, however, the sector is still characterized by widespread discretionary and informal practices that undermine the disciplining logic of formal institutions, confound the ability

of the regulator to police, and ultimately threaten environmental policy objectives. These miners' descriptions of the mining culture in Guyana convey a reality of lawlessness that many critics have long bemoaned:

> I'll tell you something… Most of the average 4-inch dredge owners doesn't have a licence… More than often… They have to pay the warden… Most of the dredges that working in Mahdia, they does not have papers pon' it… (Interview 139)

> You can't really ask me why I wouldn't back fill it… Nobody don't backfill it! Big ones, small ones, anyone! Nobody don't back fill! When they finish working a pit and they ain't get gold they move onto a next pit… (Interview 133)

While some attribute the persistent failure to mine properly or follow rules to ignorance that could be overcome through education, others recognize that there is a powerful suspicion of authority within gold mining sectors and a seemingly socio-culturally-driven propensity to evade rules (Crawford & Botchwey 2017; Peluso 2018). Many trace this longstanding culture of dynamism and impunity in the interior in Guyana to the roaming pork knocker lifestyle of hard-drinking, lawlessness, and perpetual movement[71]. Indeed, when I asked one young miner why he was working with no papers when obtaining them was just a matter of a trip to the local mining office, he proudly replied, "Because I is a hustler."

In practice, however, most miners are very calculated about how they evade rules, making transgressions even more difficult to monitor. When caught mining illegally, for example, miners will sometimes wait a number of hours and even appear to be closing down their operation until they are sure the officer is gone – after which they will recommence mining certain that it will be several more months before the next monitoring visit. As one miner suggested, "officers would visit a particular area, issue a cease work order but as soon they leave, it is business as normal" (Interview 118). If they are ordered to move, they will simply choose an area further away from the road that is less likely to be monitored next time. The prevalence of such practices and the lack of regulatory capacity means that degrading activity can go unmonitored for many months before officers intervene – and, even when they do, it can recommence within minutes of an officer's departure.

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[71] A lyrical portrayal of this lifestyle can be found in the 1958 Jan Carew novel, 'Black Midas'.

The short-term mentality of gold mining meanwhile makes it difficult to see the property right as a source of prudent resource management (Seccatore et al. 2017). After all, unlike 'eco-regulatory' resource-based activity such as agriculture, miners have no long-term incentive to look after the mining claim in order to make it more economically sustainable. On the contrary, according to one miner, the priority of mining is to "extract and beat out as quickly as possible", with little regard for an environment that the miner will never have to see again (Interview 133). These tendencies are further intensified by the kinds of stressed conditions of production that stem from landlordism that were looked at in previous sections. As one Mines Officer expressed:

> Do you think he's going to mine a whole area, and then plant some trees…?! No, he's not going to because, first of all, he has spent GY$79m in gas… So, you see, even those… even though they know they've got to maintain it, they're not… You hardly… I've never heard of a miner who volunteers to plant back trees… No! It's not going to happen! (Interview 66)

6.6.1.3. Regulatory limitations

The realities of mining dynamics mean that any state would be faced with a significant regulatory challenge; Guyana's level of institutional under-capacity makes these challenges an inevitability. At the time of writing, only around 38 field officers were charged with monitoring thousands of operations dispersed across Guyana's vast and often unpassable forest landscape. Indeed, despite the rapid rise in mining since the mid-2000s, a leaked GGMC (2015, p. 6) report conceded in 2015 that "supplies and field expenses as a percentage of the total expenditure [have] been steadily reducing, suggesting that the extent of field activity has reduced."

This regulatory challenge is exacerbated further by the proliferating conflict and complexity within the mining sector that has been documented so far in this chapter. After all, for many miners, the lack of available land and the high costs of getting a position is making them reluctant to get into word of mouth or written contracts for fear of being 'used' as a prospector, which is leading them to 'work an edge' or 'raid'. As this miner explains:

> … It's just that they are scared about going on a man land, without certain work permit, and bore gold, and feel that the man going to put he off… so he rather tek a chance and hustle… work an edge… (Interview 139)

The expansion in raiding practices is harming the overall standards and environmental conditions within the sector, with those mining illegally particularly unlikely to follow rules and regulations. While some miners are raiding opportunistically on others' properties, others have moved into National Parks or Amerindian villages (Stabroek News 2017d).

6.6.2. State integrity

> Let's be frank, as well… even with the government agencies that are supposed to regulate these miners… they're the worst criminals and corrupted officials you could come across… Even though they go in there and they get hardship posting salaries of 200,000 a month… Do you know how easy it is for a miner to come and say, 'hey, here is 400,000 a month, turn an eye, right?' I'm not saying that all government officers are corrupt… But the temptation is so great… right? (Interview 15)

Miners' willingness to engage in informal practices has undoubtedly been facilitated over a number of decades by corruption within the regulator. Although corruption is ubiquitously associated with the ASM sector in general and with the GGMC in particular, the exact practices constituting corruption in the field are somewhat opaque – partly because researching corruption is such a difficult and (often) dangerous occupation. According to the research conducted in Potaro for this thesis, the main modality is the selective enforcement of rules, according to which officers monitoring an operation will find an abuse of the regulations – either administrative or environmental – but will overlook it in exchange for a reward, typically an amount of gold. Considering that a Mines Officer is only earning around GY$100,000 (US$500) per month, such temptation is understandable (an ounce of gold was worth US$1,500 in 2017). As is illustrated by the quote from a miner below, such practices clearly have governance – as well as environmental – implications:

> Two officers came up… we were 'shitting in the river'[72] there… because it was a first pit and we didn't have anywhere to put them yet… the tailings… Otherwise we would have had to dug two pits from the start, at a cost… The two officers took an ounce or so each, then a couple of days later their two buddies came 'round and took another ounce… And that's the problem we're having… (Interview 118).

Another form of corruption is through officers forging relations with illegal miners and giving them prior warning of monitoring or enforcement visits. When accompanying some GGMC officers on an enforcement visit to an illegal operation in Potaro, for

[72] Dumping tailings into the river, rather than into a tailings pond.

example, it was discovered that a GGMC officer had already warned the illegal miners in advance of the GGMC visit, most likely in return for a pay-off, enabling them to move their machinery away from the area in time.

Over a period of time, the ubiquity of such abuses has contributed to the erosion of respect for officers and the GGMC and a decline in willingness to take rules seriously – knowing any transgression can be paid off. However, despite a generally negative view of the GGMC, some claimed that many miners invite unwanted attention from officers by failing to take regularization measures seriously:

> I have never… paid a warden! Never! I have no intention to bribe a warden… It's like you're encouraging to make matters worse… I have papers, so what are they asking me for now? Why I have to give you a pennyweight or five pennyweight for? You ask me for my licence, yes… You're asking me for permit, yes… I know the rules and regulations… I don't want to pay a man just to cover my fault… (Interview 134)

Furthermore, there are different ways of understanding corruption that go beyond the simple legalistic definition. As the mining community is so close-knit, officers will often know many of the miners personally, having built up relationships over many years of sharing time together in the interior. Officers' monitoring activities are also often highly dependent on the hospitality and cooperation of hinterland communities, and friendships will often overpower the strict need to enforce rules. Frequently, then, officers may not want to punish small operators for a mere administrative error if they see they are already struggling to comply. Relatedly, there are important personal security dimensions that constrain officers' willingness to act on instances of corruption as they are often alone and isolated in the jungle, and do not want to make enemies. Potaro has after all been the site of several violent confrontations between miners and officers. Cumulatively, however, such leniency has further contributed to environmental problems, even as it has arguably underwritten the 'success' of the sector, as one GGMC official conceded:

> I do admit that there is some amount of leniency in the mining industry, in terms of holding to the letter of the law… There are certain things that are not directly to the letter… For example, in terms of mining and the issues of reclamation and… and all of those things… If those things were imposed, then mining would have never really have blossomed into what it was… You see, they were required to reclaim every single pit that they dug… and restore it! But then it would not have been an economical venture…! (Interview 87)

Another GGMC Mines Officer however recognized that such leniency was causing miners not to take regulations seriously:

> You need to send a message that we're serious about enforcement… by seizing operations, moving to the courts… minor offences are currently being overlooked because of bribery or sympathy, like… a lack of papers or an unregistered dredge not being punished… The mining system is regularized in Guyana, but there is poor enforcement… and rules only tend to exist on paper… (Interview 68)

6.6.3. The dynamic socio-ecology of dredging

Even if the state could be better resourced and corruption could be eliminated, managing mining would still be constrained by the dynamic socio-ecological nature of alluvial mining activity itself, which is forever threatening to overwhelm the boundaries designed to contain it. From a transboundary perspective, environmental externalities, particularly tailings material and mercury-bearing effluvia, frequently spill over the boundaries of mining properties, polluting rivers, creeks, and settlements – especially when correct mine management methods are not followed. From a trans-temporal perspective, the short-term nature of mining further means that environmental abusers are rarely held to account, with Mines Officers unable to reach the field until months after the perpetrator has disappeared.

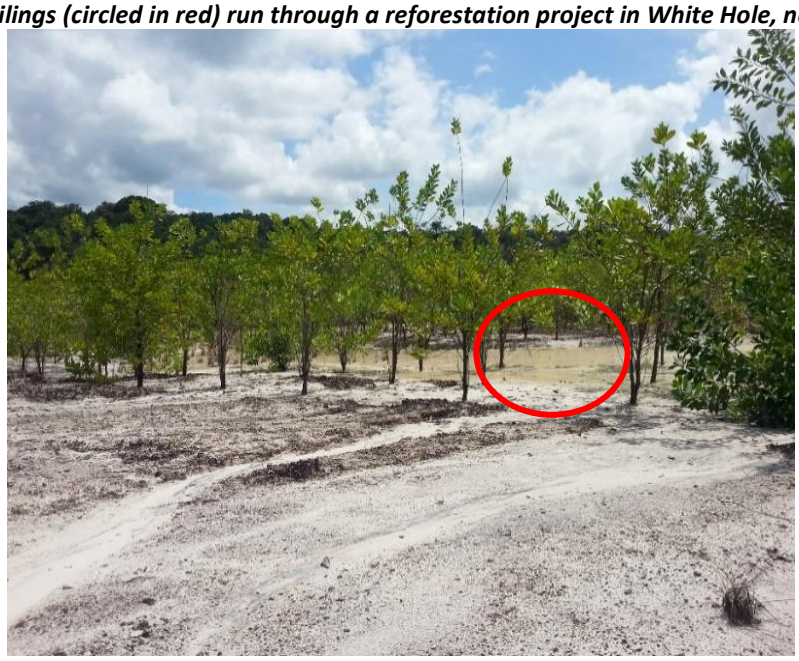
Technology also interacts with the dynamic ecology of the mining landscape in unexpected ways, threatening well-intentioned institutional and technical interventions. A case in point is the ever-evolving nature of mining technology, which, as this miner explains, is constantly opening up new opportunities for profitably re-visiting previously 'mined out' areas:

> Up to today when I went into White Hole for the first time… If you see dredging there and you see what they're doing…They're still working… Somebody told me that, look, they have a system now, like… the crusher… beat up those mud balls… the gold is in there… That is an indication… that there's nuff gold… When people do re-mining… it's like the kind of equipment they had years ago… couldn't catch the gold… couldn't catch the gold, so… People who work the system that produce 100-150 ounce of gold, 25 throw away… So they go back with a smaller system, proper management… and they getting 10-15 ounce of gold… (Interview 134)

Although this ability to return to the same area with more efficient technology appears, on one hand, to offer the opportunity to 'contain' degradation in one area, it also poses a challenge for policy planners who must then make choices about if and when to 'close

off' an area and design post-mining land use plans[73]. Such a conundrum can be seen in the White Hole area of Potaro, where significant 'green' mining resources were expended on restoring and re-vegetating 'mined out' areas under the GENCAP programme, only for ongoing technological developments to make the previously-worked-out area once again viable, with the subsequent mining activity degrading the costly restoration work (as illustrated in Image 6.10).

Image 6.10: Tailings (circled in red) run through a reforestation project in White Hole, near Mahdia



Source: Author

6.6.4. Discursive disagreement

While the previous sections examined some of the more *material* factors that are undermining the mainstream articulation of green mining in Guyana, subtler discursive dimensions may also be at play. These dimensions relate to contestations around reform framings that make miners reluctant to adhere to rules and regulations in the desired ways. They join with other factors – such as the suspicions among miners about the state's motives for reform that were identified in Chapter 5 and the resentment towards the state at its failure to address tenure issues that was identified earlier in this chapter – to undermine the overall buy-in among miners around the reform agenda.

[73] This would also require a new classification for de-gazetted mining lands to be created as, at present, no formal process currently exists for doing so, leaving any area in a Mining District vulnerable to being re-claimed.

6.6.4.1. Differing perceptions of environmental risk

While miners' unwillingness to cooperate with policy reforms is often framed as evidence of their blatant disregard for the environment and their narrow focus on money-making – and while policy-makers see the solution as a simple question of education – the evidence from Potaro suggests that miners' scepticism is more reasoned than is typically acknowledged. Attitudes among miners to a range of commonly-cited environmental impacts will now be examined in order to illustrate the nature of discursive contestation on the ground.

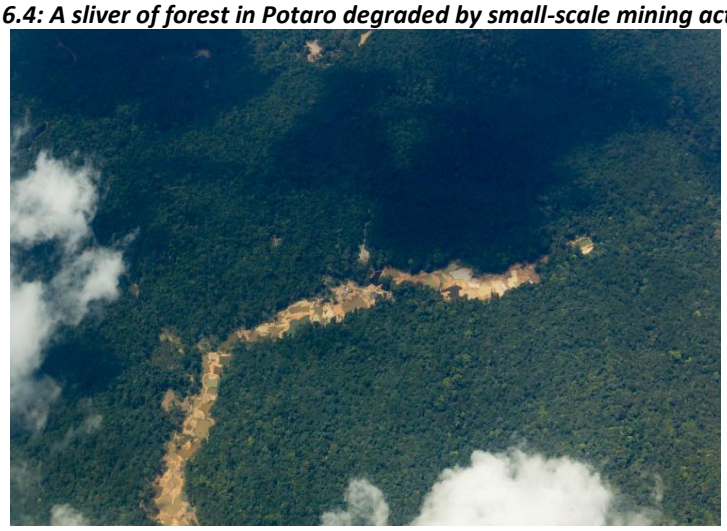
6.6.4.1.1. Forests:

The mining-deforestation nexus was increasingly highlighted in Guyana following the emergence of remote sensing data in the late 2000s that attributed 90% of deforestation to gold mining, and it has been widely cited as justification for urgent mining reform. However, a common response of miners in Potaro was to claim that Guyana is so vast that the effects of a small amount of forest loss are minimal, a sentiment illustrated by Image 6.4. As one miner explained:

> When you check the mining we did, you wouldn't know there was mining, because, you fly over this place, like, you barely see a little scratch in it… We… we haven't troubled our forests at all yet… (Interview 129)

Such a sentiment chimes with comparative data showing that, although deforestation rose rapidly since 1990, the peak annual rate in Guyana in 2014 of 0.065% was still low when compared with the rest of South America, which, according to the FAO (2015), was around 0.41% per year. Guyana's overall forest coverage remains at 85% of its land area.

Image 6.4: A sliver of forest in Potaro degraded by small-scale mining activity



Source: Dwayne Hackett

Miners further argued that, as they are only interested in the areas where alluvial deposits are found, and as these areas are limited to certain specific locations, it cannot be said that all of Guyana's forests are under threat. The White Hole area near Mahdia, seen in Images 6.5 and 6.6, is a case in point. Originally cleared and prepared for exploitation by Canada's Golden Star Resources in the 1990s, the area was eventually parcelled up and given out to local miners. Twenty years later, after numerous return visits by different miners, the area is still popular, and, by local accounts, although yields are declining, it is nonetheless still 'viable' as a mining area.

Images 6.5 and 6.6: 'White Hole', near Mahdia, re-mined numerous times over the past two decades

Source: Author

A further GGDMA-driven counter-narrative that has been increasingly taken up by miners is based on a challenge to the *definition* of deforestation being used by the Guyanese government[74]. According to this argument, mining is inaccurately framed as a cause of *permanent* forest loss, when in fact its impacts are only 'temporary' disturbances. In Potaro, almost all miners cited routine evidence of re-growth of vegetation following the cessation of mining activities as evidence that casts doubt over the mining-deforestation nexus:

> But when it comes to vegetation… Places re-vegetate quick… certainly it depends on the kind of soil and… there aren't a lot of mined out areas… I say no, they don't have mined-out areas… I don't really agree with that term, 'mined-out' (Interview 78)

[74] The GGDMA, for example, referred me to this FAO (2010, p. 24) definition: "Deforestation implies the long-term or permanent loss of forest cover and implies transformation into another land use… Deforestation also includes areas where, for example, the impact of disturbance, over utilization or changing environmental conditions affects the forest to an extent that it cannot sustain a tree cover above the 10% threshold."

Some miners do however concede that the extent of re-growth is partly dependent on re-contouring the land or backfilling after 'closing off' a mine, with some claiming that many areas that have been mined have completely grown back in 'ten years'. Indeed, the author observed that a formerly-mined area was indeed beginning to re-vegetate, after what was apparently just 'a couple' of years, as illustrated by image 6.7. The *quality* of the re-growth is a different matter, and evidence from elsewhere suggests that biodiversity levels do not necessarily recover (Hirons et al. 2014).

Frustrated at the negative attention that mining receives, some miners tried to contextualize their own destructions to forests by arguing that the 'slash and burn' type of agriculture practised by Amerindians is more destructive than mining as it involves land clearance and burning – an activity that generates emissions both through the loss of forests and the release of carbon (Interview 22).

Image 6.7: Natural re-vegetation in a mined-out area near Mahdia

Source: Author

6.6.4.1.2. Water:

With respect to rivers and creeks, many miners conceded that pollution by tailings material and ensuing turbidity has created some unsightly and regrettable damage. As one miner speculated:

> The water dirty… in the water… the drinking water… That's about the worst, I think… And the silver… As fishes get silver in them… (Interview 131)

However, most emphasized the dynamic nature of the landscape, and believed that, ultimately, rivers and creeks would start to "run clear again" once mining has ceased in that area. This contention was supported by some GGMC officers who have observed and recorded recoveries in the turbidity levels of water courses, as captured in Image 6.8.

Image 6.8: A GGMC officer tests turbidity in a creek

Source: Author

Although miners generally claim to understand the requirements for tailings management, many tended to use stories about recovering ecosystems to justify their continued transgression of rules. After all, as was discussed in the previous section, with the level of technology and capital that most miners possess, managing tailings to the standard required is simply beyond their means.

6.6.4.1.3. Mercury:

The biggest contemporary environmental concern in the ASM world is that of mercury pollution. Although miners interviewed in Potaro somewhat proudly claimed that they no longer use mercury in the pit and avoided using plates[75], most nonetheless continue to throw mercury in the (sluice) box during amalgamation and afterwards burn the amalgam in the open air with a blowtorch. While miners appeared to recognize that the vapours may condense and enter the water supply and food chain, many were philosophical about the possible impacts:

[75] Mercury-coated copper plates, used to separate gold in the recovery process.

> I mussee got a lot of mercury cos I should have burning a lot of gold, since when I was a youth man… They're banning mercury basically because it's affecting humans…But what about alcohol? Alcohol doesn't affect humans? You ban silver, right? What about motorbike? Motorbike kill a lot of people every year… Cars… kill a lot of people… How much people you hear mercury kill? Guns! Cutlass… knife… All them things kill people when people pick it up and use it… But the mercury there… One, one… might dead… Me ain't know when I last hear of somebody die in mercury… (Interview 131)

There is generally a strong socio-technical association between mercury usage and poorer miners, as mercury is empirically observed to be the most effective way of recovering the fine gold particles from the depths – and using the more rudimentary methods – that they can access. Larger miners, on the other hand, who are extracting gold from rocks or deeper gravel – and who are not so dependent on the finer gold particles for their livelihoods – necessarily depend less on mercury. They are able to afford the kinds of technology recommended by the IADB (2017) for 'green' mining, such as centrifuges and concentrators. Several smaller miners emphasized the appropriateness of mercury to their methods:

> We small miners come from pork knocker times… We all of us using silver, right? Cyanide dangerous… we using quicksilver all of we days of we life… That's the only technology small miners know about… You understand? (Interview 137)

> I find it… working with mercury is good… You have some fine fine gold that people say, you've got to use mercury… Use mercury in the last… end… (Interview 78)

> But I don't think they should ban mercury… Small miners now… are using their spade and batel… Them can't work if you ban mercury… How are they going to acquire the alternatives… Leh we say… when school closed… these school children… they does go with a batel and spin with the batel with a pinch of silver you give he… tek he fingers, rub it in, and sell me… Sometimes it's 5 grains[76]… Sometimes it's half a pennyweight… (Interview 131)

As far as precautions go, most small miners cite their own decades-long use of mercury as evidence of its harmlessness. Miners generally keep retorts in their camps, but most avoid them because they require a longer burn-time and use more fuel. As this miner explained:

> I don't use a retort, because I'm only currently getting pennyweights, which means that they would be lost using the retort…. And it is time consuming… And it burns a lot of gas… If I is getting larger amounts, it is more realistic to think to use a retort… (Interview 79)

[76] A colloquial term for the flecks of gold that are visible in the tailings material.

Such a reality suggests that non-compliance is not always unreasoned evasion but can also be based on rational, empirical evidence (Veiga & Hinton 2002). Other safety equipment such as gloves and masks is meanwhile often held in camps, but rarely used – and is only brought out and dusted off during GGMC monitoring visits. Indeed, Image 6.9 shows a miner I interviewed massaging the mercury-and-sand-mix in his bare hands.

Image 6.9: A miner handles a gold-mercury amalgam mixture in bare hands

Source: Author

The only safety precaution that is generally taken is to burn the amalgam far from – and downwind of – the camp so as to ensure vapours are not unnecessarily inhaled. Nonetheless, I also encountered a miner who took his gold-mercury amalgam home to burn on the same fire that his family cooked their food on. Such a blasé attitude towards mercury – redolent of the fearless machismo often associated with gold mining culture – is conveyed in this quote:

> I know a man… he used to burn gold… he used to work with this man, Ray Rahaman… he was a manager… He tell me he burned gold til his skin get white… plenty gold… And he was 50 something years old and still going strong… he's still alive… (Interview 131)

Although a small number of syndicates have (initially) agreed to adhere to the increasingly strict requirements, for most miners the lack of consensus around the issue – as well as the prohibitive costs of alternatives – makes their decision to stick with mercury an easy one.

6.6.4.2. Contested responsibility

While there is contestation around representations of the environmental problems, there is also disagreement about who is responsible. The mainstream discourse, which is echoed by larger miners, tends to blame under-capitalized and incorrigibly errant smaller miners for contributing to environmental degradation, and the GGMC for permitting such activity to continue. It was common during fieldwork, for example, to hear some extreme characterizations of miners, particularly from conservation actors, but also from some larger – or, as one miner insisted on stressing, 'successful' – miners. One conservationist, for example, characterized miners as "devils" and implied that if they were released from mining, they would contribute to a surge in crime on the coast (Interview 15). At the ground level, miners in Potaro were not only resentful of these characterizations; they were also suspicious of the overall motives of the agenda, which many saw as being driven by international interests and bureaucrats who simply didn't understand the sector. As two miners explained:

> This government, from what I see… They don't like… heartaches and headaches from all these little little little people… They're like… you know what? Let's tax them and eventually they'll phase out. They think it's better to deal with 5 big companies than to deal with… 100,000 small miners… But they fail to realise that these small miners… these 100,000 small miners can put them out of business… out of office… (Interview 135)

> I think the approach to small miners is to phase them out… As soon as the oil declare… we gonna see it more blatant… We're gonna see it more, because you'll have another source of economic development… (Interview 134)

Smaller miners were moreover vocal in their protests against the way their activities are framed within reform discourse. While casting themselves as the main declarers of gold who provide jobs and income for people on the coast, they appeared to resent bearing the brunt of regulations. Contrasting themselves with the 'big miners' who were engaged in smuggling and exploitation, many stressed their relative uprightness and lack of choice in following rules. Furthermore, they stressed their relatively small ecological footprint, lacking the machinery to clear-fell trees or the money to burn mercury or diesel profligately. Many argued that, while larger miners are often praised for their ability to exploit 'cleaner' technologies, most 'large' miners use exactly the same maligned methods as them – dredging and mercury recovery – merely on a larger and more destructive scale. As one miner exclaimed, "they using the same methods as we!"

(Interview 34). Similarly – and as will be seen in the next chapter – many miners reserved a particular lack of sympathy for Amerindians, who they believe have perpetuated a 'victim narrative' vis-à-vis mining when in reality they are just as responsible for degradation as the non-Amerindians.

6.7. Conclusion

This chapter has engaged in a detailed case study of contemporary experiences of small-scale mining and mining reform in the Potaro Mining District in Guyana, a State lands context that represents the most common institutional setting in which mining is carried out. While the mainstream approach tells a story of reform being a simple issue of closer adherence to – and stricter enforcement of – the state's version of 'responsible' mining, this chapter has highlighted how a range of powerful socio-political and socio-discursive phenomena (recognized by a political ecology analysis) appears to be undermining this storyline.

Principally, the reform context is one circumscribed by significant contestation around the structural basis of tenure and the process of accessing and working on land – realities that are understood as connected to the perceived mal-distribution of land. As well as being a source of political resentment and socio-economic injustice, these dynamics also appear to be mediating the effectiveness of green mining policies by raising costs and heightening land insecurity for smaller miners – while also burdening the state with extra monitoring responsibilities. However, moving beyond both mainstream and populist discourses around land access and the conditions of production, it appears that the story is more complex than the 'miner vs landlord' debate would seem to suggest. Indeed, challenges smaller miners face in performing the increasingly strict version of mining, while undoubtedly strongly mediated by structural relationships with landowners, are also shaped by the uncertainties that surround gold's nature and location.

From the perspective of policy effectiveness, it appears that the formal framework itself is struggling to contain mining activity within proposed limits in this context. This is partly because miners are struggling to satisfy technical requirements amidst structural constraints and the regulator is struggling to perform its functions amidst a proliferating complexity around contractual mining arrangements, integrity issues, and complex socio-ecological challenges. However, it is also because the lack of consensus about the exact

nature of the mining-environment relationship is undermining buy-in among miners, many of whom are sceptical about the characterization of the problems and the rationale for reform. Overall, this case study suggests that, even within a relatively established formal mining environment such as Guyana's, there are still important questions of epistemological legibility and economic and social legitimacy that reform approach must confront and address.

Chapter 7: Indigenous mining, land conflict, and green reform in Maicobie

7.1. Introduction

This chapter will engage in a place-based study of mining and mining reform within the titled Amerindian village of Maicobie. It will examine how the rendering of mining realities within the mainstream reform narrative again diverges from the way its different elements are experienced and perceived on the ground. These misreadings relate to the legitimacy of land and mineral titles, livelihood patterns, and the effectiveness of formal institutions in securing a 'sustainable' outcome – as understood by both village and state. While many of the same enforcement and transboundary impact issues that undermined the storyline about 'green' mining on State lands are also evident on indigenous lands, the additional complexities presented by a diverse settled community located within the Mining District suggest that the technocratic vision of 'green mining' must respond to a more diverse set of political, cultural, and ecological tensions and concerns.

7.2. Origin stories, contested external boundaries, transboundary effects

7.2.1. Background

Contestation between indigenous communities and miners has escalated in recent years in Guyana as a result of both increased competition over land in the hinterland and a growing activism among the Amerindian population around both their claims on the land and the socio-economic and environmental impacts of mining (Hennessy 2013; Bulkan 2016; Hilson & Laing 2017b). This has culminated in several high-profile court cases between villages and mining interests and a generalized expansion in low-intensity conflict across the interior (Kaieteur News 2013b). Maicobie is no exception, and in 2016 and 2017, the village itself launched several new court cases against the GGMC for what it saw as its role in allowing miners to persistently infringe its rights (Guyana Chronicle 2017c).

For sympathetic observers, such as international NGOs, indigenous organizations, and selected academics, titled Amerindian villages such as Maicobie – which are located in

the centre of Mining Districts – are perennially beleaguered by outsiders who trample over and ignore their pre-existing customary land claims (Colchester et al. 2002; Hennessy 2015; Bulkan 2016). For such critics, the existence of a dedicated Amerindian Act cannot be considered as evidence of Guyana's progressive approach to indigenous affairs for as long as, in theory and practice, it falls short of securing rights and defining responsibilities. As an APA report argues:

> The Act lacks clear and fair procedures for defining the geographic extent of indigenous peoples' lands and contain no criteria for securing their traditional territories in accordance with their customary law and traditional systems of land tenure (Dooley & Griffiths 2014, p. 14)

Miners have meanwhile stood their ground, increasingly contesting Amerindian claims of 'indigeneity' and 'prior occupation' of the land, and strongly opposing proposals to grant further extensions to certain Amerindian villages (Guyana Chronicle 2017b). For miners in particular, villages such as Maicobie have no record of ancestral occupation and are guilty of opportunism and cynicism for having deliberately 'located' their villages in the middle of a rich gold and diamond mining area in order to exploit the resources. As one Potaro miner explained:

> The extensions that Amerindians are asking for… is for land that have mineral wealth… They see my land there and that's what they want… they haven't had a village there before, they never lived there before… Now, what's happening now to the miner who been in Kurupung for the last hundred years? Why can't he get his land there? What's happened to the miner who's been in Port Kaituma, who build that town? Why can't they get their lands? What happened to the miner up in Imbamadai? What happened to all these communities… mining communities where miners build roads, do development? Why can't they get their lands? Why is it not so, that they should get those lands (Interview 20)

Furthermore, miners have increasingly argued that Amerindian rights have now unfairly *surpassed* those of other ethnic groups in Guyana, strongly driven by political expedience. As one miner argued:

> You know what spoiled these Amerindian people? When the former government was in power, they used to go into these areas, and offer these people so much. They start giving them rights to the land and their extensions… Especially at elections… So you find that these people start getting power, they start getting greed… they start making demands… They offered them so much, and they want and they want and they want all the time! (Interview 34)

As others have observed, such arguments are emblematic of polarized miner-indigenous discourses in Guyana (Hilson & Laing 2017b). In order to interpret the relevance of such

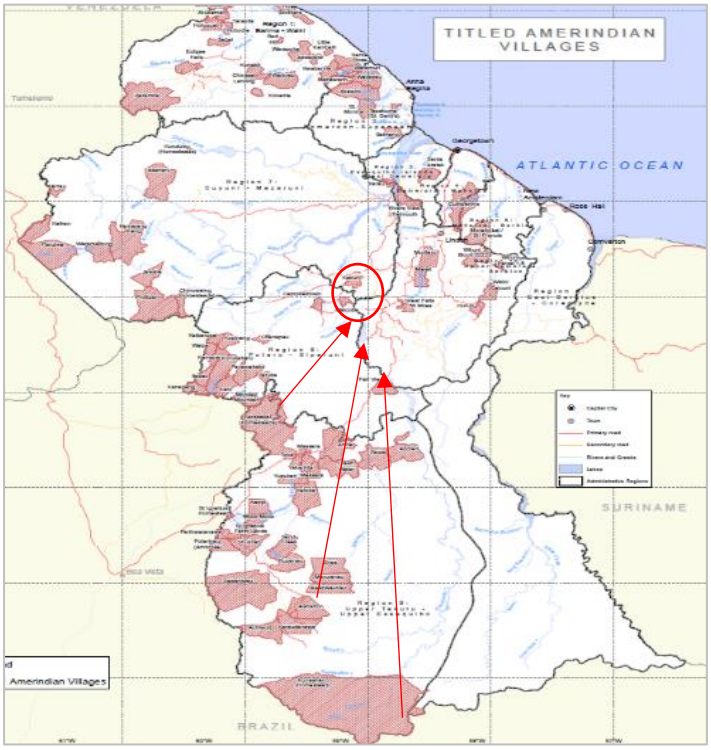
debates to the present discussions on mining reform and 'green' development pathways on indigenous lands, however, it is first necessary to unpack the history of Maicobie and the process through which the village eventually won its title within Potaro Mining District – an achievement facilitated by the process outlined in 2006's Amerindian Act.

7.2.2. Origins

The majority of Maicobie's elders belong to the Patamona tribe whose 'traditional' lands in Guyana were located in the upper reaches of the Potaro district – villages such as Chenapau and Kopinang (Butt Colson 2013). However, reflecting the inscrutability of reconceiving indigenous tribes according to the terms of the modern state, some of the Patamona themselves probably migrated from other locations that today lie both within and outside modern-day Guyana, illustrated by Figures 7.1 and 7.2 (Bulkan 2006). Indeed, while the elders that I spoke to in Maicobie claimed that *some* of them were born in nearby settlements such as Tumatumari and *are* ethnically Patamona, others claimed that their parents were originally from other parts of Guyana, such as the Rupununi, and that they came to the Potaro region seeking employment, largely in the mining sector. Many of today's latter-arriving Amerindian villagers came to Maicobie after the 1960s seeking employment in the then-flourishing river mining sector where they were favoured within the racialized division of labour as divers on river dredges as a result of their smaller physical stature and perceived high stamina[77] (Colchester et al. 2002).

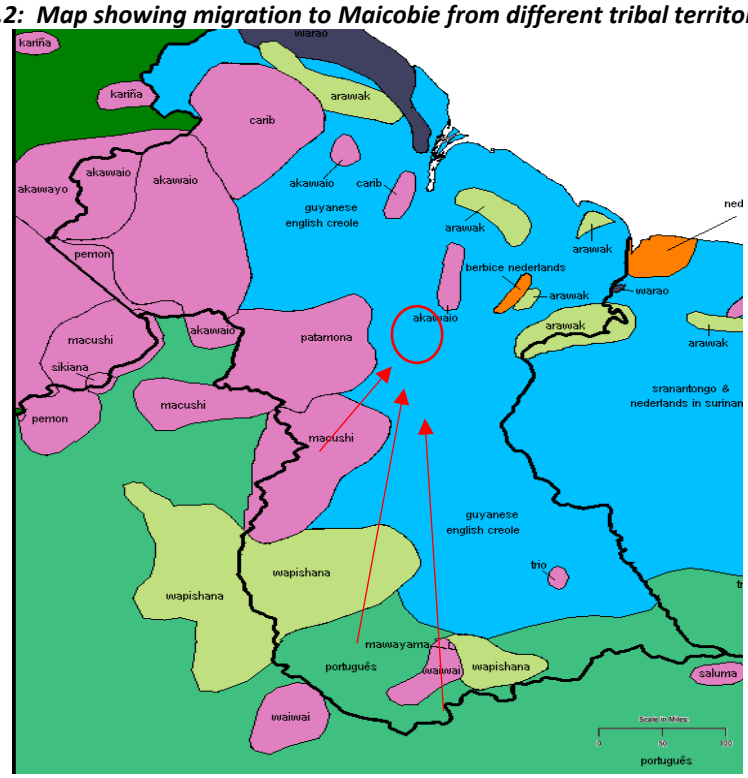
[77] This was a dangerous occupation that involved guiding the nozzle of the suction hose deep underwater for hours at a time while wearing a specially-designed diving mask. As missile dredges developed later on, allowing the suction nozzle to be operated from the surface, diving became less common (Colchester et al. 2002).

Figure 7.1: Map showing migration to Maicobie from different villages



Source: Adapted by author from Ministry of Natural Resources and the Environment

Figure 7.2: Map showing migration to Maicobie from different tribal territories



Source: Adapted by author from Muturzikin. Accessed at http://www.muturzikin.com/cartesamerique/7.htm

The ethnically mixed group of elders who are considered the 'founders' of Maicobie were mainly dwelling in what was then known as 'Tumat'[78] when they were met by British Guiana officials who were conducting an assessment of indigenous lands in the 1960s as part of a promised Amerindian Land Commission[79]. They were advised by the officials to find a less flood-prone piece of land that was large enough to accommodate their growing community. In this way, several of the elders located the site of present-day Maicobie, and then proceeded to clear the land, build houses, and plant cassava and other crops.

By this stage, river mining had already commenced in Guyana – both through the British and through an increasing number of coastal Guyanese operations (Bulkan 1998). It is this prior occupation of the interior by Guyanese from the coast – who are referred to by Amerindians today somewhat pejoratively as 'coastlanders' – that provides a large basis of the criticism of prior indigenous claims of villages such as Maicobie (Hilson & Laing 2017b). Indeed, some of those early miners whose families have since settled and expanded in the area could justifiably claim to have 'been here first'. Furthermore, the fact that the mix of tribes that ended up flocking to Maicobie were primarily motivated by the opportunity to work in the mining sector undermines, for many miners, indigenous arguments about the 'cultural' integrity of their land claims[80]. As one miner stated, forcibly:

> It has nothing to do with culture… Culture is superficial, because there is no proof, there is no historic identity, there is nothing… It's all about the economic… 'We want our land because we inherited and used to hunt there…' But in the bottom ground, you say, 'well, you can hunt and fish… or you can mine with gold…' And the conversation changes… You understand me? It needs to be seen as an economic issue… (Interview 22)

Although there was also significant agriculture in the 1960s – indeed, the original name for Maicobie was 'Cassava Hill'[81] – this 'traditional' activity dwindled during the 1990s (with the expansion of land dredging opportunities for Amerindian males) to such an

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[78] This refers to the settlement close to the Tumatumari waterfall, a mile or so above Maicobie's current location. Officially, this settlement was known as El Paso.
[79] Brokered by the first Amerindian MP, Stephen Campbell, the fulfilment of the Amerindian Lands Commission was one of the promises of the British before they left in 1966.
[80] The Ministry of Indigenous Peoples' Affairs, INGOs, and Amerindian advocacy groups typically emphasize the 'traditional' nature of Amerindian livelihoods – and Amerindians themselves as 'natural conservationists'.
[81] A name apparently given to it by a British Guiana official because of its abundance of cassava.

extent that today it is reasonable to consider Maicobie as primarily a mining community. Indeed, as the Toshao quipped to me during my visit, the village now "resembled a backdam" (Interview 119). During my visit in 2017, I observed that the majority of food consumed by the village was now imported from Georgetown, rather than being cultivated within the village, and it appeared that, apart from a few older villagers, very few households were still cutting farms. As one older villager explained:

> People here have become lazy, like coastlanders… dependent on buying food... Some of they complain they'll have to farm on State lands because of mining in the village, but they only saying that because they're too lazy to go across the river and cut a new farm! Toshao had to buy 17 sacks of farin from Region 9 the other day to sell in the store… No one plant cassava anymore except the old folks… (Interview 116)

For miners, the reality of Amerindian involvement in mining today confirms their suspicions about the original motivations for Amerindian land claims. However, in spite of their protestations, many miners appear to accept Maicobie's current title, provided they do not apply for any extension. This is probably because the area Maicobie eventually received – a mere 23.5 square miles, with much of that land to the north of the Potaro river reduced to uninhabitable swamp in the rainy season – does not significantly encroach on the best mining lands.

For many villagers, receiving such a small land area was due to political pressure from the mining lobby not to allow Amerindians to 'lock up' land in what was one of the richest mining areas in the country. The small size of the title combined with the poor quality of the land meanwhile further undermines farming aspirations, paradoxically locking the village into a mining pathway:

> We normally used to farm… over here… but you find now that the land now is filling up with houses… So we can't get farming land… So, we decide now to go over this side…But the mining affecting them over suh… If it's possible for us to get an extra piece of land… we would ask for over this side… Because, our ancestor used to live over there… for hundreds of years… and they have fruit trees over there that the old people them, like, mango trees… some big big mango trees… over there… (Interview 127)

Not all villagers blame the government for holding up the titling process. Others concede there was sloth on the part of a succession of Toshaos and Village Councils in initiating the process. Some outside observers also cite poor advice from indigenous organizations, who dissuaded villages from engaging with a titling process that was seen as undermining

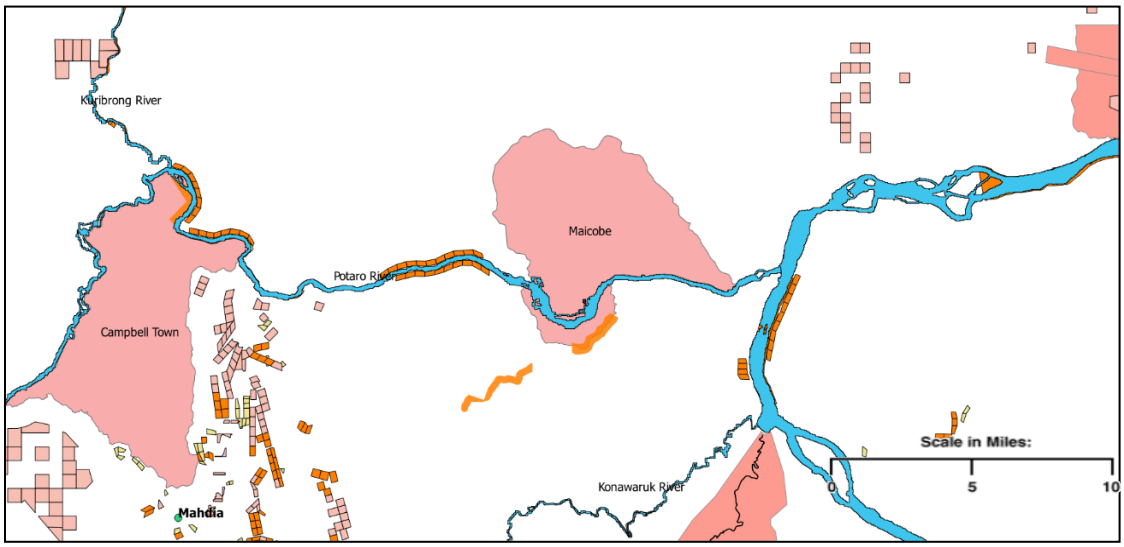
the principle of indigenous customary territories and as settling for a 'Western' notion of delimited communal land (Interview 28). Whatever the reason for the latter-day titling, the undeniable predicament was that by 2006, Maicobie was literally an island in the middle of mining properties, with areas that had once been occupied or utilized by the village as hunting or fishing grounds now either occupied – or affected – by mining.

7.2.3. Pressure from outside: transboundary environmental effects and lax enforcement

7.2.3.1. Spatial dimensions

The massive expansion in mining activity in the Potaro district since the early 2000s meant that by the time Maicobie received its Absolute Grant in 2006, the area was both covered in – and surrounded by – mineral properties – both the river that runs through the village, and the land area itself. Figures 7.3 to 7.6[82] provide location-specific illustration of the gradual encroachment of formal mining properties around Maicobie village since the late 1990s. The variously coloured blocks represent the mining properties that were in existence in the selected years[83]. As well as the increasing number of properties, there are also spatial encroachments and clear 'overlaps' with the village's title.

Figure 7.3: Mineral property distribution in the Maicobie area in 1999



[82] All maps are GIS layers adapted by the author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

[83] Note that, although the current Maicobie village title is shaded pink in *all* maps, the village did not receive its title until 2006, and so it is only in the 2010 and 2015 maps that the title was in existence.

Figure 7.4: Mineral property distribution in the Maicobie area in 2005

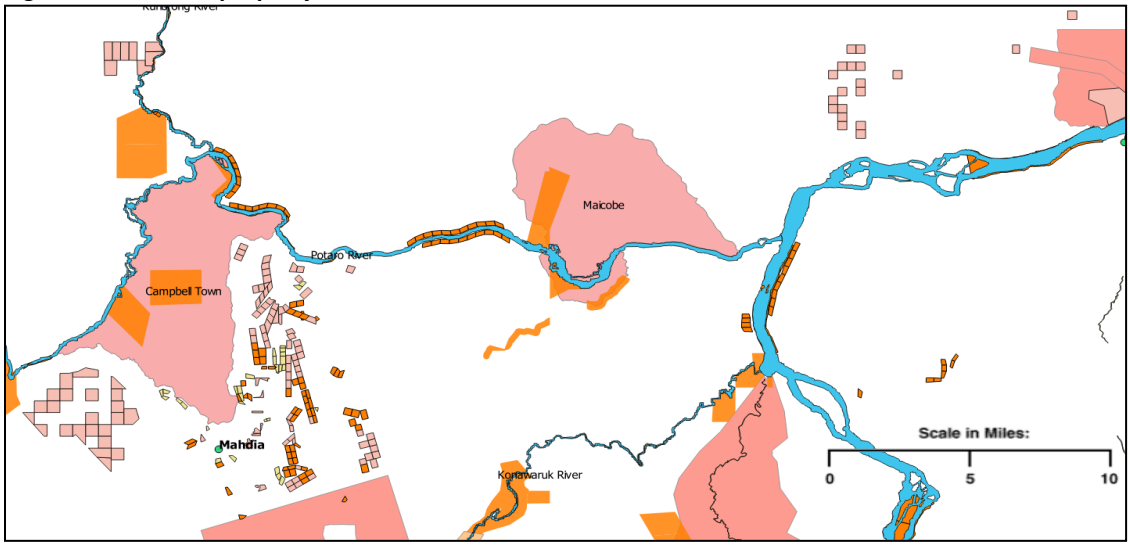


Figure 7.5: Mineral property distribution in the Maicobie area in 2010

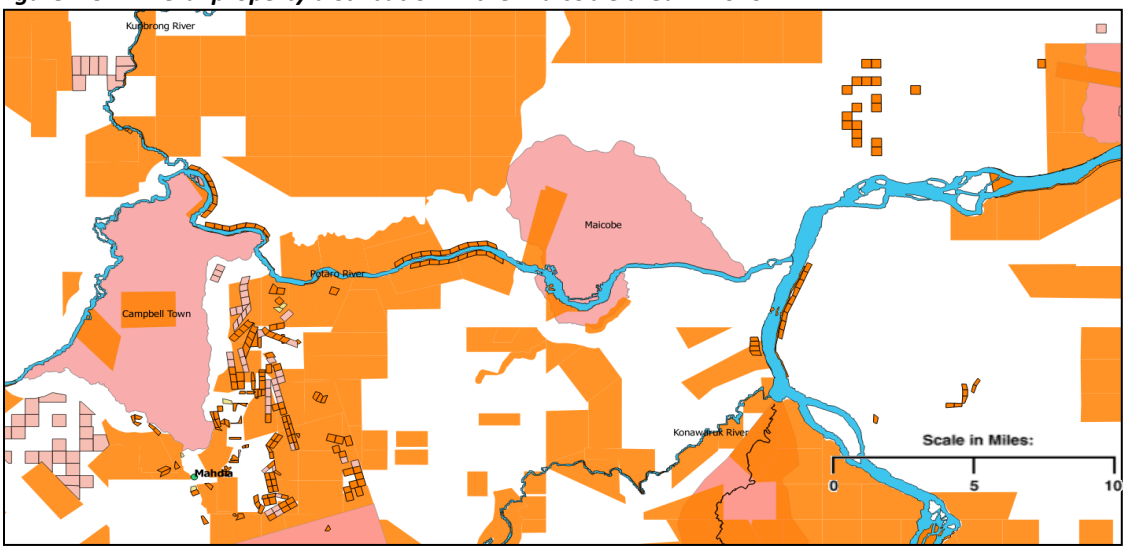
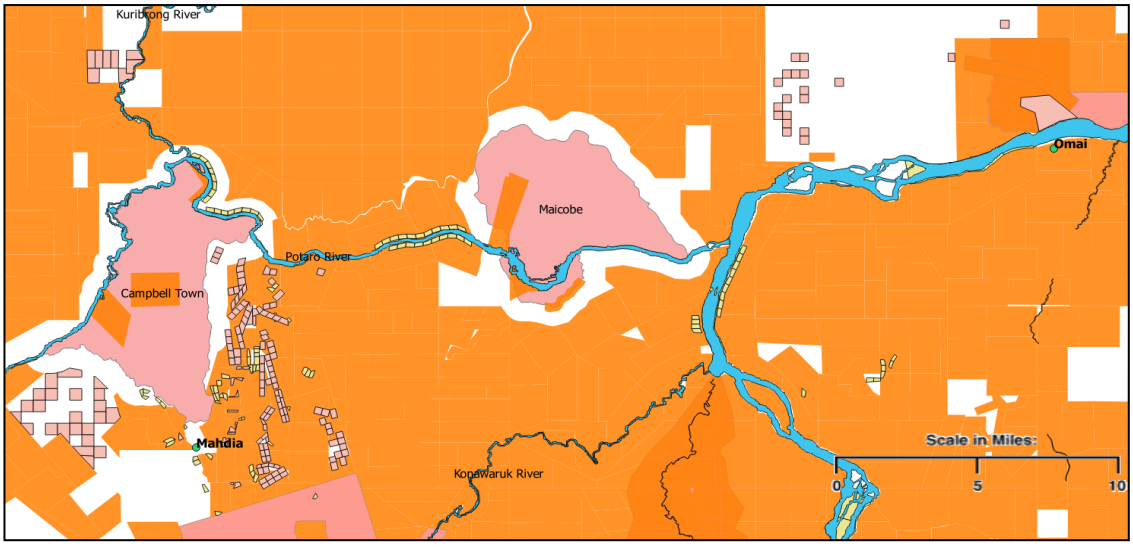


Figure 7.6: Mineral property distribution in the Maicobie area in 2015



The consequence of Maicobie's inundation by mineral properties is that there is now a constant cultural, social-economic, and ecological pressure on its boundaries. For villagers, a range of 'bad influences', such as alcohol, drugs, and prostitution, are being brought into the village by the mining culture. There are also various environmental impacts that the village's external boundary is powerless to prevent.

For example, creeks and rivers lying within the village's title are being polluted by waste tailings material flowing from mining operations lying outside the village. The subsequent river turbidity is preventing fish from being able to see the hook, reducing the village's ability to catch fish, harming diets and the viability of fishing as a livelihood. Further damaging fish stocks is the destruction of nesting spots by *dragas*. This means that villagers have to expend more fuel travelling further up to the Essequibo to fish. As one older villager recounted:

> I first visit Maicobie… 1967… During those days, fish… could eat… You could go anywhere close by and fetch a fish… with your hook, and you come and you make a cook and sit down with your family and you eat… Now… you've got to go the whole day sometime, and the afternoon come… nothing… This type of dredge they call the draga… destroying all the fish nests… Places where we used to go normally with we hook and catch a fish… fast! You can't get fish there now… You got to search there now… We don't know where they gone and live… We searching… (Interview 127)

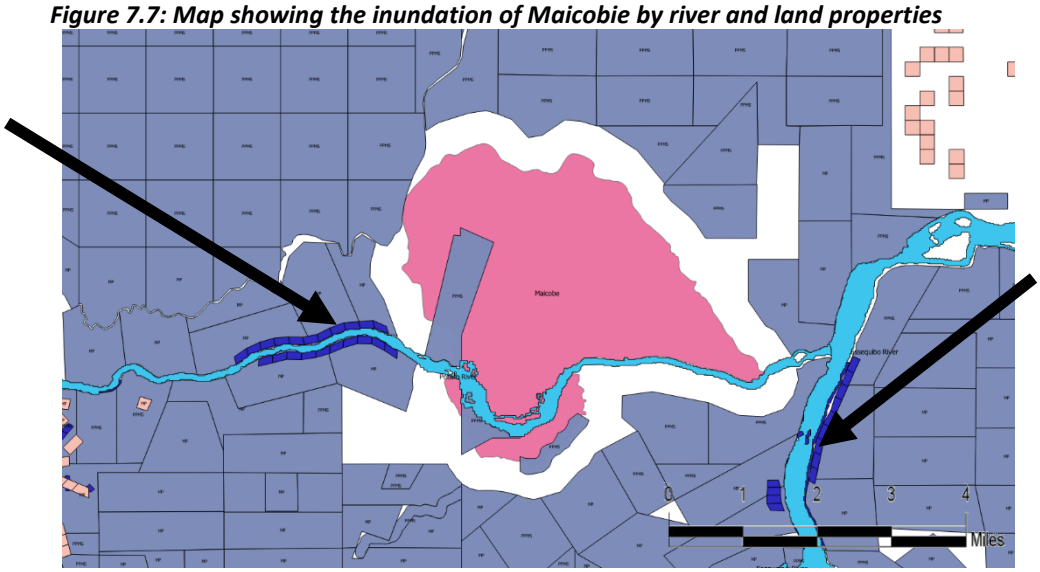
Villagers also claimed that they are suffering from an upsurge in malaria:

> Since the miners start to establish in this area, they get a lot of big ponds and suh… and mosquitoes… And so we start to get malaria in this village… Before, then, I don't know about malaria… When I was growing up, I don't know nothing about malaria… But since… we move here and the miners start to… Before those malaria specialists used to come around, and nobody had malaria at that time… (Interview 123)

Although only speculative, villagers also complained of a rise in birth defects, which they attributed to the contamination of creeks and rivers by mercury which washes in from all directions (Guyana Chronicle 2017d). The few prior studies to have been conducted in the village did indeed report higher concentrations of mercury in hair samples compared with non-mining villages (Bulkan 1998).

All of these impacts are felt particularly strongly because, although the village is located amidst socially and ecologically dynamic mining ecosystems, the discourse of communal land that accompanies Amerindian institutions in Guyana means that the village is required to remain within its fixed spatial boundaries, which – in Maicobie's case – circumscribes a very small area that can barely sustain the community. Although there is a process for applying for an extension of the titled area, this would be highly problematic considering that, as can be seen in Figure 7.7, most land surrounding the village is already occupied by a mineral property owner and is probably already be being mined.

Figure 7.7: Map showing the inundation of Maicobie by river and land properties



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

7.2.3.2. Timing

Many villagers believe that the severity of these impacts could however have been minimized if the area requested in the village's original land application had been accepted, as it would have provided a wider buffer zone between the mining activity and the village settlements – at least more than the current buffer zone of two hundred metres[84] provides today. This larger area was, after all, more aligned with the envisaged outcome of the 1960s Amerindian Lands Commission which was to bequeath a vast territory for each of the tribes reflective of indigenous people's migratory livelihood patterns in the continent (Colchester 1997). As it was, the Patamona people of the Potaro,

[84] As stated in Mining Act Cap 65.01 s80.

as with the Akawaio in Upper Mazaruni, were only given a fraction of that area in discontiguous titles that were bound on all sides by increasingly-coveted State lands (Bulkan 1998).

However, even with a larger area, the transboundary nature of alluvial mining's impacts means that activity hundreds of miles upstream can still affect the village – as is being seen with current disruptions to major rivers (GHRA 2017). Furthermore, as much of the degradation to the rivers and creeks in the Potaro District is historical (and caused by technologies and practices that are now illegal, such as river bank mining with missile dredges), an expansion of the village's title today would still leave it with a degraded landscape.

Despite mounting evidence of significant destruction and disruption to Amerindian livelihoods caused by currently legal technologies such as cutter head dredges, the powerful industry lobby has managed to stave off any bans. In this context, even miners' perfect adherence to the laws and codes would still result in negative social and environmental consequences for a village such as Maicobie. Such a reality illustrates the limitations of the concept of 'green' mining, as, whilst a type of activity can satisfy the vision of sustainability of one constituency (the regulator), it might fall far short – or even be the antithesis of – another constituency's definition (such as an Amerindian village).

7.2.3.3. Lax enforcement

While expressing regret at destruction caused, the state continues to place faith in the regulations and the enforcement capacities of the GGMC to secure the desired outcome. However, as has been much discussed in recent years, and as was looked at in detail in the previous chapter, enforcement is an enormous challenge. In spite of the fact that mining within 66 feet of river banks has been illegal since 1998, for example, the activity appears to be continuing with impunity, especially among Brazilian *draga* operators, who often operate at night in order to evade regulatory visits. Image 7.1, taken in 2016, dramatically illustrates the extent of degradation on the Potaro River as a result of historic – and ongoing – river bank mining. The image shows evidence of systematic damage to river banks just down from the Tumatutari Falls, just above Maicobie village.

Image 7.1: Degradation caused by mining near the banks of the Potaro River near Maicobie

Source: Stabroek News Accessed at https://www.stabroeknews.com/2016/news/stories/12/05/ggmc-mum-reports-mining-damage-riverbanks/

Further images from the Potaro River taken by the author in 2017 illustrate that, as with the situation on State lands, enforcement is not being effectively carried out, with villagers alleging that wardens are still regularly overlooking abuses in exchange for bribes.

Image 7.2: River bank damage on the Potaro River near Maicobie

Source: Author

When confronted with such images, miners typically place the majority of the blame on the failings of the GGMC. Indeed, in a Stabroek News (2016a) article accompanying Figure 7.1, for example, GGDMA executive member, Edward Shields, admitted that although "mining disturbs the environment"…"there are laws in place to prevent" such degradation. Shields continued: "He (Joe Singh) needs to attack the GGMC, not the miners… Ask the officers at GGMC why they are not implementing the environmental laws and stop blaming the miners…" Shields further pointed out that the environmental regulations were established in 2005 and questioned why they are not being complied with (Stabroek News 2016a).

7.3. Villager involvement in mining: under-acknowledged, illegal, but tolerated

7.3.1. 'Indigenous mining'

Although frequently overlooked in both indigenous activism and policy narratives (partly because the former appear such a major source of information for the latter[85]), Maicobie is a classic example of one of the many Amerindian villages that has got 'deeply' into mining. Although this participation has become more structured and conscious in recent years, it began as a result of the village's geographical proximity to mining activity. As mentioned in the previous section, Maicobie has been the site of significant river and land mining since the 1960s, and as land dredging became more popular in the 1990s, the village began to receive requests from outside miners to mine on their land. Although critics argue that these relationships were often exploitative, villagers would often receive compensation and supply labour in cooperative arrangements (Bulkan 1998).

At this time, however, the villagers themselves were not heavily into mining within the village, with the majority of the men tending to travel outside to a workground in Blackwater, Tiger Creek, or further afield. This is a practice that was further catalysed in the 1990s by the proximity of the village to the Omai Gold Mine, which, according to

[85] The majority of literature on indigenous Amerindian affairs in Guyana comes from a handful of 'activist' sources, such as the APA and the FPP. As researchers are often financially and logistically dependent on these indigenous organizations, the subsequent research tends to lean heavily on these organizations' own narratives. While these narrative are not 'wrong', they are often highly selective (Interview 14).

Bulkan (1998) was the destination for many Amerindian men from all over the country. According to some villagers, the reluctance to become dredge owners was due to a lack of prior entrepreneurial experience and the perception that owning machinery was a risk – indeed, most Amerindians prefer the flexibility of working on someone else's claim, and they are generally the most sought-after workers due to the perception that they are the most hardworking ethnic group.

However, at the encouragement of a local East Indian businessman who had married into the village – and stimulated by the rising gold price – more and more villagers began acquiring their own dredges in the mid-2000s and began operating them within the village for the first time in activity that continues up to the present day. In addition, the Village Council continued to invite 'outsiders' onto the land in return for a tribute of around 10%.

At its peak, in 2013, there were, according to villagers, around 45 dredges operating in the village, and the monthly high of (recorded) gold production within the village was around 90 oz. This amount has since fallen to around 15 dredges and only around two or three ounces per month, with the majority of these dredges now being operated by outsiders who pay the Village Council a tribute. According to villagers, the cheaper Chinese machinery that villagers had acquired quickly broke down, and easily available – as in, shallower – mineral reserves that such 4-inch dredges could extract became exhausted. Contrary to claims that Amerindians mine 'more sustainably' than coastlanders, an Amerindian advocate conceded that Amerindians, who invariably use the same mechanical dredging methods as everyone else, contribute similarly to degradation:

> In terms of pursuing… what you may call, responsible and environmental mining… I think the miners, er, they come from a mining culture that is not civilized… you understand? They pick up anywhere and destroy trees and things like that… And there is no doubt about it… There are some Amerindian people that will… they just cut down and things like that, you know… Yeah, it happens… (Interview 19)

Today, many Brazilians, Indians, and Africans have made Maicobie their home, and at the time of my visit, Maicobie was hosting around 15 different dredging operations on its land – mainly Brazilians, with whom Amerindians apparently enjoy better relations than

with Guyanese 'coastlanders' due to their shared cultural and geographical history. The interest in village land from outsiders is intelligible in the context of the higher degree of competition for land within State lands, and the increasingly onerous working conditions that landlords had begun demanding from dredge owners – two issues that were explored in detail in the previous chapter. As one current Village Council member said: "we're the last land that hasn't yet been used up" (Interview 121). Outsiders' interviewed also appeared to appreciate the amenities and the security that working within the village offered compared with the dangerous atmosphere in backdams (Interview 132).

7.3.2. Illegal, but tolerated

The paradox here is that all of this mining activity is in strict contravention of the mining laws. According to the Amerindian Act, as Amerindian titled villages do not own the sub-surface rights, which reside in the State, they are only permitted to practice 'subsistence' mining, with a *batel*, on their land[86]. Anyone – villager or otherwise – wishing to practise mechanized land dredging must do so only within a mineral property that has been granted by the state[87]. As new claims cannot be staked on titled lands, prospective miners would have to apply to the GGMC for a medium-scale prospecting permit and convert it to a mining permit, which would in addition need to be agreed to by two-thirds of the village council[88]. In reality, however, the vast majority of Amerindians in Guyana are practising – or permitting – land dredging on their village lands.

This is because Village Councils generally assume (wrongly) that their Absolute Grant allows them to mine discretionarily 'within the village', and to invite outsiders onto the land in exchange for a tribute. This misunderstanding appears to stem from the fact that the Amerindian Act explicitly outlines a process through which the Village Council can extract a tribute from outsider miners[89]. However, what is little understood is that this only applies to *new* official applicants and companies who apply through the above-mentioned process, and not to either *pre-existing* claim holders or to anyone else who the

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[86] According to the Amerindian Act 2006 Cap 29:01 s52, Amerindians may exercise a "traditional mining privilege", meaning they can carry out "artisanal mining" or "subsistence" – i.e. non-mechanized – mining.
[87] According to Amerindian Act Cap 29:01 s52.
[88] Amerindian Act Cap 29:01 s48.
[89] Amerindian Act 2006 Cap 29:01 s51 (1)) states that "A miner shall pay the Village tribute of at least 7% of the value of any minerals obtained from Village lands from small or medium-scale mining."

Village Council desires to invite informally onto their land. The confusion has been compounded by the GGMC, which has tacitly endorsed a process of permitting villagers and invited outsiders to mine within titled village lands provided they are mining according to the regulations and their paperwork is in order, meaning that though Amerindians do not have *de jure* rights, they have effectively developed *de facto* rights to claim mining royalties from pre-existing operations.

While the GGMC is often criticized for overlooking such contraventions of the laws, in this case it seems that the practice of permitting mining to continue within villages has been done with some goodwill – tolerating it in order to enable communities to benefit from activity that they know to be their only real source of income. In the meantime, the upshot of this is that there are currently hundreds of illegal (but *permitted*) mechanized mining operations mining within indigenous lands. The normalization of a process that has evolved discretionarily again appears to provide another illustration of the fluidity inherent in small-scale mining authority and governance (Peluso 2018).

While a senior GGMC official informed me that they are aware of how widespread such activity is, for the moment they appear to be tolerating it (Personal communication). This means having to accept occasionally problematic instances when careless practices on illegal operations are the source of conflict or disaster. One such incident occurred a few days before I arrived in Maicobie, when there was a mining death caused by a collapsing pit wall on one of the 'regularized' illegal operations for which the village was receiving a tribute (Stabroek News 2017b). Although at the time the GGMC blamed the village and shut down the operation, it kept quiet about the legality of the operation in question. The operation apparently started back up a few days later and was still going when I arrived.

7.3.3. Contested development pathways

The decision to pursue a mining pathway is one that has clearly brought material benefits to the village. Compared with other Amerindian villages that I visited in Guyana, Maicobie appeared wealthy, with three shops, a health centre, and with most villagers owning some form of vehicle and sending their children to Georgetown or Mahdia for school. Further, unlike many other villages, Maicobie has been able to retain its family

structures as men from the village have not had to migrate to mine. Many villagers see mining as their only pathway to modernization:

> We want… we Amerindians… a modern life… everybody living a modern… want to go into a modern life… I would like to have a car… myself… I would like to have a big house… Because, if we get enough money we could make ourselves better than how we are… we don't want to be like this… I mean, most of the Amerindian people today, want to go up… they don't want to be like this, all the time (Interview 127)

Nonetheless, a decade of dredging within the village has generated environmental impacts, including land degradation (as seen in Images 7.3 and 7.4), stagnant pools, and a rise in vector diseases. These impacts are exacerbated by the fact that, unlike the previous case on State lands where miners are transitory dwellers within the backdam, Maicobie's existence as a permanent community means that the community must live with the long-term consequences of many of the ecological impacts. With the village stuck with its delimited land title, there is nowhere else for them to go, and with limited land area to expand into, the pressure to maximize what they can from their small land area is intensified:

> We does tell we people… We don't say… 'stop farming'… we tell them they must farm… Because, according to what the Amerindians does tell them, gold doesn't got a second crop… that's what we say… When it done, it done… But they say, 'when you does plant, you could get a second crop, you could always go and plant back again…' but with gold it finishing… I got to say, the workground almost finished (Interview 126)

Images 7.3 and 7.4: Land degradation caused by mining activity within Maicobie village

Source: Author

Source: Author

Mining has also brought new social problems, such as envy, social differentiation, and a suspicion towards those perceived to be benefitting, particularly those close to the Village

Council. Villagers reported that some decisions – such as the one to mine within just a few metres of houses – are taken unilaterally, and some villagers feel as if mining has overwhelmed village democracy. These grievances are sharpened by the fact that the environmental damage being caused is not after all being equally experienced, with some, living closer to the mining operations, being worse affected. As one older villager explained of the decision to allow outsiders into the village to mine:

> I thought that the land for we… people… Now, they giving people permission… outsiders… And sometime we does get problem with them now… I say, its problems they want! Villagers could do it, because, I know the money is going to circulate here… but outsiders… coastlanders… they taking the gold… they give you money, and they gone… (Interview 127)

Such findings concur with Bulkan's (1998) observations about how the ascendancy of mining interests within Amerindian villages has created stratification as a result of the disproportionate power and control over mining decisions in the hands of the Toshao and his or her chosen councillors, who are often family members. As in Maicobie, this is generating internal feuds and suspicions related to the provisions of mining permissions and the transparency of the collection and usage of percentages.

7.3.4. Policy blind spots

> People tend to speak about indigenous lands as… once its secured… for an indigenous community… that natural choice will be conservation, hunting, fishing, and so on… That is no longer our reality here… and so we should stop speaking about these things in these very simplistic ways… (Interview 14)

> The conversation about mining and indigenous people usually happens as if indigenous peoples don't mine…and they're the victims of mining… whereas in many communities… they *are* the miners… And, while, it does not benefit the community as whole… its indigenous people who drive the mining in many communities… (Interview 18)

In spite of the evidently deep indigenous participation in mining in Maicobie and the apparent need to think of it as a 'mining space', a succession of government and donor-funded projects have continued to ignore this reality and have instead promoted their own vision of 'sustainable development' for the community. Indigenous rights groups such as the APA have meanwhile continued paradoxically to reinforce these approaches by obfuscating the extent of indigenous participation in mining and casting Amerindians purely as victims of mining (e.g. Colchester and La Rose (2010)).

Prior development policies in Maicobie have therefore supported the promotion of non-mining livelihoods, such as farming and eco-tourism, and have largely failed to have any impact due to both underfunding and a lack of local support. An ADF project, for example, funded the construction of a poultry pen, but most villagers interviewed seemed unaware of this development.

As well as these misguided attempts to encourage villagers to leave – or prevent them from entering – the mining sector, the state has also been failing to provide the necessary technical assistance to communities that could possibly help them address or mitigate some of the root causes of indigenous-created environmental impacts of mining. The Toshao observed the minimal provision of training support for Amerindian miners through the GMSTI, though he admitted that there has been a corresponding lack of sensitization among villagers for the improved practices (Interview 119). This chimes with observations made a decade earlier by the APA concerning Amerindian participation in mining training: Colchester et al. (2002, p. 14) observed at the time that GENCAP "did nothing" to involve Amerindians in activities.

For policy-makers, the perpetuation of this state of denial about Amerindian dependence on – and willingness to participate in – mining has been a source of frustration that is ultimately undermining progressive efforts towards managing the landscape. For one conservation professional, the predication of approaches on myths and wishful thinking is rooted partly in an in-built bias against mining in development circles:

> If you're going to build a robust environmental management approach, you have to engage with these economic forces… And you have to plan with those things in mind… Cos until you are able to meet the aspirations of Guyanese, they're not going to give a shit… about frogs or endemic plants, or anything like that… And with all due respect, they shouldn't… They shouldn't… they need to worry about surviving, and prospering, and I think that's where conservation professionals get lost… they almost get sucked into this international agenda… without recognising… and what I find is… and myself included… is conservation professionals tend to come from upper middle or more elitist backgrounds, where they can afford to care about these things… (Interview 14)

7.4. Legal (but resented) claims, denied benefits, and dynamic ecologies

When Maicobie received its title in 2006, several 'coastlander' businesspeople, both miners and loggers, voluntarily gave up their concessions lying within the spatial

boundaries of the village's title out of respect for the Amerindian community – even though they were strictly under no obligation to do so. Only one or two businesspeople refused to give up their claims, and one in particular continued to ply the river with his *dragas*. This land owner moved back into the village in 2016 to start mining on claims he said he had held since the 1980s. The problem for the village was that the land he was claiming as his own was an area where the village itself had started allowing outsiders to mine on in return for a percentage. So why did the land owner return?

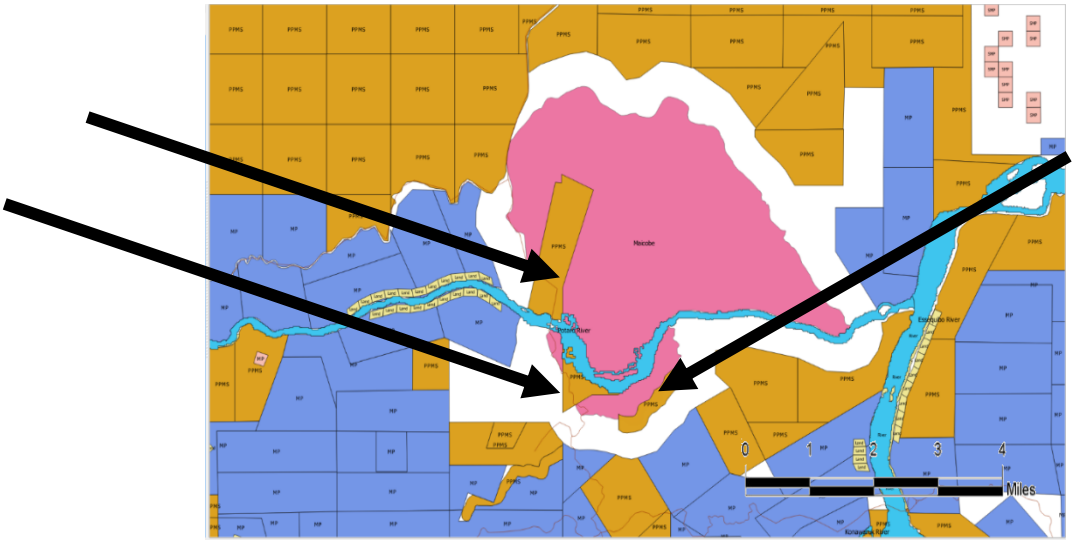
The villagers believe the land owner returned once he heard about a switch in technology. Indeed, while the land owner was apparently content for the villagers to give permission to outsiders with low-powered technology to operate on the land, the Village Council's decision to allow a miner with an excavator and a 6-inch dredge led the land owner to demand that the tenant be removed from 'his' claim. When the village contested his claim and refused to move the tenant, the land owner sought to re-establish control over the claim by instructing the GGMC to cease all operations. In response, Maicobie instructed legal action against the GGMC for issuing claims on their titled land. But who is in the right?

7.4.1. Land claims

Technically, it appears that miners have every right to continue mining on properties that were held prior an Amerindian village's application for Absolute Grant as a result of a condition in the Grant derived from the State Lands Act[90]. The clause, now widely known as the 'save and except' clause, demands that legally held claims and concessions that existed prior to the date of title application and that fall within the spatial boundaries of the village are respected (Kaieteur News 2013d). Thus, for Maicobie, any properties that existed prior to the date of its Absolute Grant award in 2006 must be respected, as illustrated in Image 7.5. As can be seen from the official 2016 GIS map of Maicobie in Figure 7.8, there are several medium-scale properties (that came into existence prior to the award of the village's absolute grant in 2006) that appear to be 'within' the village's land.

[90] State Lands Act (1972) Cap. 62:01.

Figure 7.8: Map highlighting mineral property overlaps with Maicobie's title



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

However, according to the mining and Amerindian laws, such 'encroachments' should not be seen as such, but rather should be seen merely as parcels of 'State lands' that were *not included* in the village's original title (and never will be unless the village formally applies for them again). Indeed, these parcels will remain as State lands, relocatable by any resource user in the future, even should the properties 'go abandoned'. As the lawyer who was one of the drafters of the Act explained in a newspaper article:

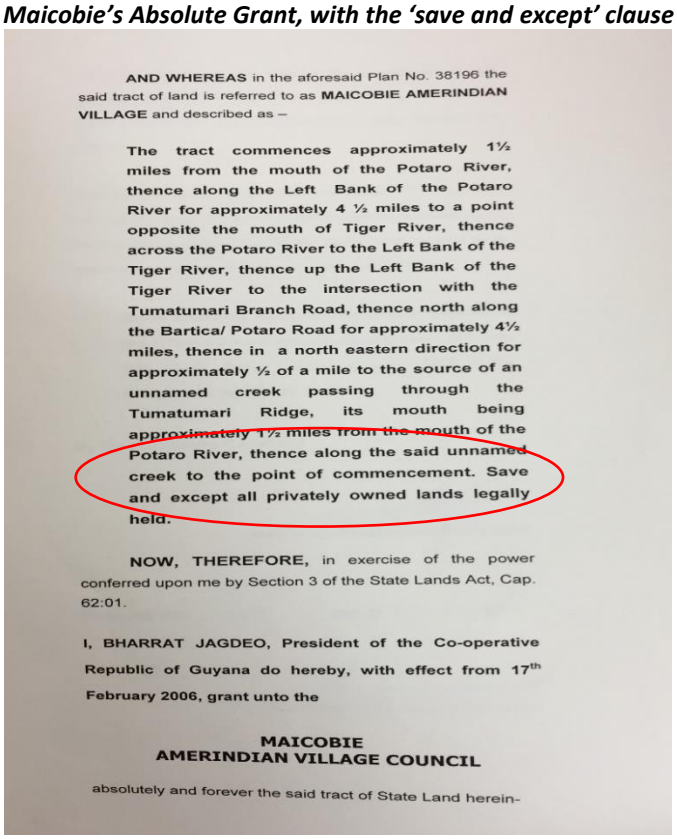
> If any Amerindian community believes that they have "traditional lands" they can claim ownership of those "traditional lands" under the Amerindian Act 2006. If their claim is successful they get absolute ownership. If the claim fails over any part of the "traditional lands," that part is excluded from the absolute title[91].

The 'save and except' clause, still not well understood by Amerindian villages today, has been the source of growing anger and frustration among Amerindian villages since the 2006 Act came into force, and there are current attempts to amend the Amerindian Act to correct this perceived injustice (Kaieteur News 2016b). The APA has been one of the Act's most fervent critics, routinely citing a United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) clause (which is not however legally binding) in support of their argument that the existence of the 'save and except' clause is evidence that indigenous people's Free Prior and Informed Consent (FPIC) is being systematically

[91] See Stabroek News (2013).

ignored (Dooley & Griffiths 2014). MacInnes et al. (2017, p. 154), in referencing Guyana, even conclude that the overlaying of mineral properties on claimed indigenous lands is evidence of the entrenchment of "colonial domination and institutionalized racism".

Image 7.5: A copy of Maicobie's Absolute Grant, with the 'save and except' clause highlighted



AND WHEREAS in the aforesaid Plan No. 38196 the said tract of land is referred to as **MAICOBIE AMERINDIAN VILLAGE** and described as –

The tract commences approximately 1½ miles from the mouth of the Potaro River, thence along the Left Bank of the Potaro River for approximately 4 ½ miles to a point opposite the mouth of Tiger River, thence across the Potaro River to the Left Bank of the Tiger River, thence up the Left Bank of the Tiger River to the intersection with the Tumatumari Branch Road, thence north along the Bartica/ Potaro Road for approximately 4½ miles, thence in a north eastern direction for approximately ½ of a mile to the source of an unnamed creek passing through the Tumatumari Ridge, its mouth being approximately 1½ miles from the mouth of the Potaro River, thence along the said unnamed creek to the point of commencement. Save and except all privately owned lands legally held.

NOW, THEREFORE, in exercise of the power conferred upon me by Section 3 of the State Lands Act, Cap. 62:01.

I, BHARRAT JAGDEO, President of the Co-operative Republic of Guyana do hereby, with effect from 17th February 2006, grant unto the

MAICOBIE AMERINDIAN VILLAGE COUNCIL

absolutely and forever the said tract of State Land herein-

Source: Author

The Act's supporters however counter that it was crafted to balance the rights of property holders with Amerindian land claims and that it contains adequate provisions that are not being utilized by villages. As the lawyer who helped draft the Act argued about the Isseneru case in the Stabroek News (2013):

> Mining concessions have been issued for decades over the Isseneru land – long before the Amerindian Act 2006 came into force. So it is not clear why Isseneru did not take effective action all those years, to stop those concessions being issued or renewed over their "traditional lands." It is not clear why Isseneru did not insist on a negotiated settlement with each miner or cancellation of the concession (with whatever compensation might be due), before accepting the title. The Amerindian Act 2006 allows an Amerindian community, which is dissatisfied with the proposed title, to reject the title and bring a challenge in court. Isseneru did not.

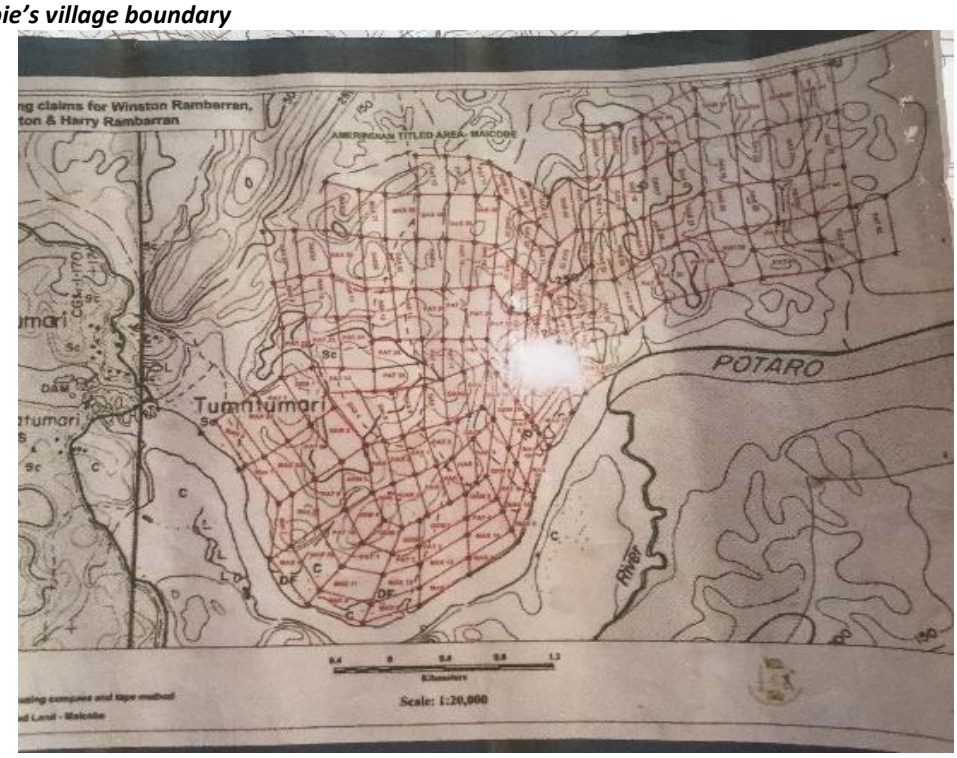
Controversially, some commentators speculate that the APA's wider objective may be to undermine the land titling process altogether as they ultimately support a return to Amerindian 'territories' rather than 'villages' (Interview 22). Others put the failure of

communities to protest mining properties earlier to a lack of information and knowledge about the process and to poor legal advice from the government (Interview 28). Nevertheless, as a result of the growing APA-driven activism from within the village, the Toshao of Maicobie was recently pressured into taking the GGMC to court, in a case that is being funded, via the APA, by NORAD (Interview 119). Based on previous cases such as that of Isseneru, it is however likely to lose because the mining claims lying 'within' the village's title were 'legally held' by the miner at the time of the village's title application (Kaieteur News 2013a)

7.4.2. A further twist

While the areas outlined in Figure 7.8 and the legal reality of the exclusion of the river from the village's title were at least known about – and so could be challenged and contested by the village – Maicobie was shaken by the discovery in 2017 of a map appearing to show that its title was even more covered in mining properties than they had previously understood. Having boarded a *draga* in order to confront the owner about its continued degradation of river banks near the village, the Toshao discovered that there may in fact be whole *further* tracts of their village lands that essentially do not belong to them. A copy of the map that was discovered on one of the *dragas* plying the Potaro River which runs through the village is shown in Image 7.6. As can be seen, it shows that almost the entire village lands north of the Potaro River are covered in claims – claims that do not feature on any of the 'official' maps.

Image 7.6: Map found by villagers in 2017 showing the apparent extent of mining claims within Maicobie's village boundary



Source: GGMC

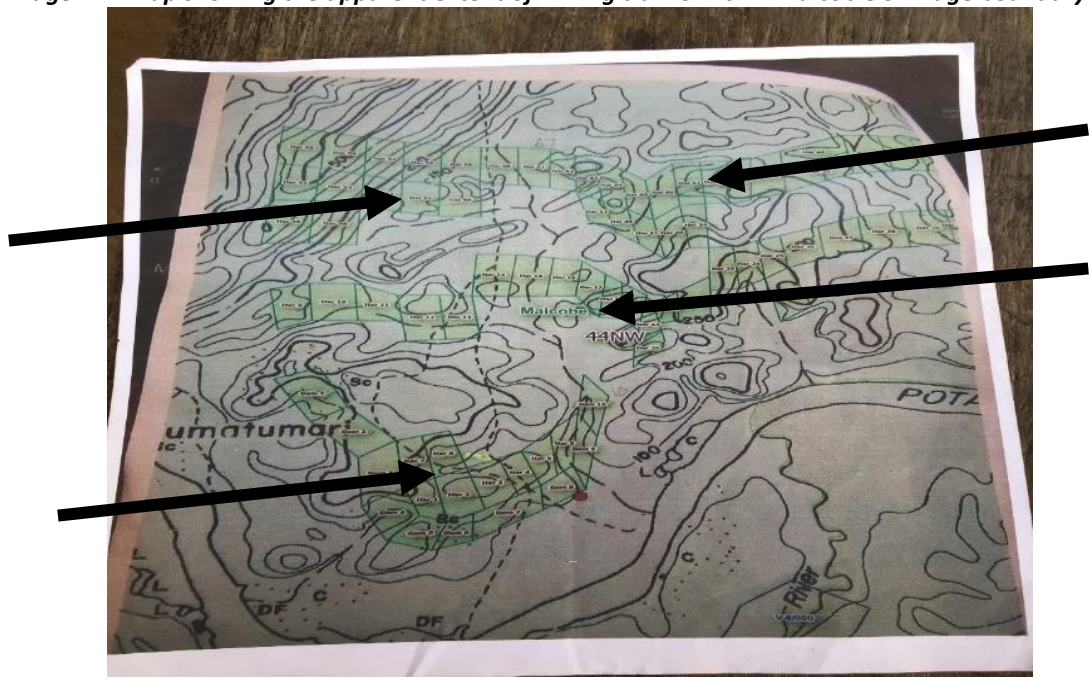
Having asked repeatedly for comprehensive maps showing the extent of claims on their titled land, the discovery of this map immediately helped the village to understand the persistence of the unwelcome miner: it seemed that his contention about the extent of his prior claims may have been true after all. Although the truth is yet to emerge, it is *possible* that the situation could have arisen as a result of the idiosyncratic process of locating a claim that was outlined in Chapter 4 – a process that is subject to confusion and lengthy bureaucratic delays. After all, according to GGMC officers interviewed, as a result of the overwhelming amount of work involved in updating active claims for each year, it is unable to keep its online GIS records (the source of the majority of the maps within this thesis and a source of information for the public) current[92]. But it is also a possibility – and a suspicion of the village – that complicity between the miner and the regulator is to blame. As the Toshao explained:

[92] Indeed, the GIS layer for verified claims in 2016 contains only 3,422 claims, a number that is thought to be no more than a fifth of actual claims being worked. Indeed, due to the vast turnover of claims – with hundreds going abandoned or being transferred every year – and thousands more being located each year and needing to be verified within the 48 day limit, it is accurate to say that the GGMC *is* faced with an impossible administrative job, given human resource constraints.

> According to the official gazette, he has 25 claims… But now… he is claiming he has over 200… So, where are the claims? How you… how you detect where and when these claims are? If he has claims, well show us where the claims are, where the lines are, you know? So, that if anybody apply for work, we can say, 'this belongs to him'… But! He just automatically owns the whole area, that one side, hundreds of claims! And… I don't think that is fair, and I know it has a lot to do with GGMC… So there is some kind of unfairness there… (Interview 119)

Appearing to confirm the wider-than-known dispersion of claims over the village, a further map was provided to the village by a GGMC officer in 2017 following the discovery of the map in Image 7.6. This is illustrated in Image 7.7, where the claims are shaded in green:

Image 7.7: Map showing the apparent extent of mining claims within Maicobie's village boundary



Source: Adapted by author from GGMC

7.4.3. Livelihoods disrupted, benefits denied

As well as being a source of moral and political anger, the presence of mining activity 'within' the spatial boundaries of the village has implications for the ecology and livelihoods of the village, with noise, air, and water pollution a daily reality. Furthermore, even if miners were adhering to regulations – and, as has been seen, transgressions appear commonplace – mining activity would still disrupt fundamentally the village's environment and livelihood possibilities. After all, even though the miner is only leasing

the sub-soil from the state[93] in order to extract the minerals, the miner must necessarily disrupt the topsoil – making it unusable for the village for agricultural (or any other) activity. In addition, the miner must pass through the village to get to the mining property, causing further ecological disruption. The opacity of the true scale of mining claims meanwhile puts the village in an additionally weak position in terms of planning their own livelihoods and anticipating the effects of mining on their community.

In terms of compensation, it is popularly believed that the Amerindian Act outlines a process through which miners with pre-existing claims on titled land must negotiate a contract with the village over the payment of a tribute. Such a fact is repeated in Amerindian advocacy literature (e.g. Dooley and Griffiths (2014)), and most of the villagers I spoke to were under the impression that this was the correct process. However, contrary to this understanding, there is no actual *obligation* for pre-existing property owners to pay the tribute; nor are they required to obtain 'permission'. These requirements only apply for *new* medium-scale mining operators who wish to locate a new claim within the village's title, or for large-scale companies that the state decides it is in the 'public interest' to allow to mine within a village[94]. Where miners with pre-existing claims on village land have historically negotiated a tribute with the village, this has been as a good-will gesture, rather than as part of a legal requirement.

Maicobie learned of its own essential powerlessness to control or benefit from mining taking place on pre-existing mining claims through its efforts to get an operation to cease operating in 2016. It found that it had no legal right to *deny* permission for a miner holding pre-existing claims on the village land: even if the village objects to the mining activity, the miner is under no obligation to cease operations. As the Toshao drily suggested, "it is more like 'notification' than 'permission'" (Interview 119). Further, while many miners do pay Village Councils a percentage, this is also a voluntary, good-will arrangement.

Such a scenario also applies to river claims. Although villagers unavoidably consider the part of the Potaro River running through its village as spatially and environmentally 'inside' their title, waterways running through land titles are *not* considered part of titles

[93] According to the Mining Act 1989, 'subsurface' refers to areas three feet below the topsoil.
[94] Amerindian Act Cap 29:01 s50.

and remain the property of the state (Janki 2009). This means that river dredge mining can continue on the part of the river that runs 'through' the village, and, as with 'save and except' properties, the owners do not need to obtain the 'permission' of the village to do so; nor are they under obligation to pay a tribute.

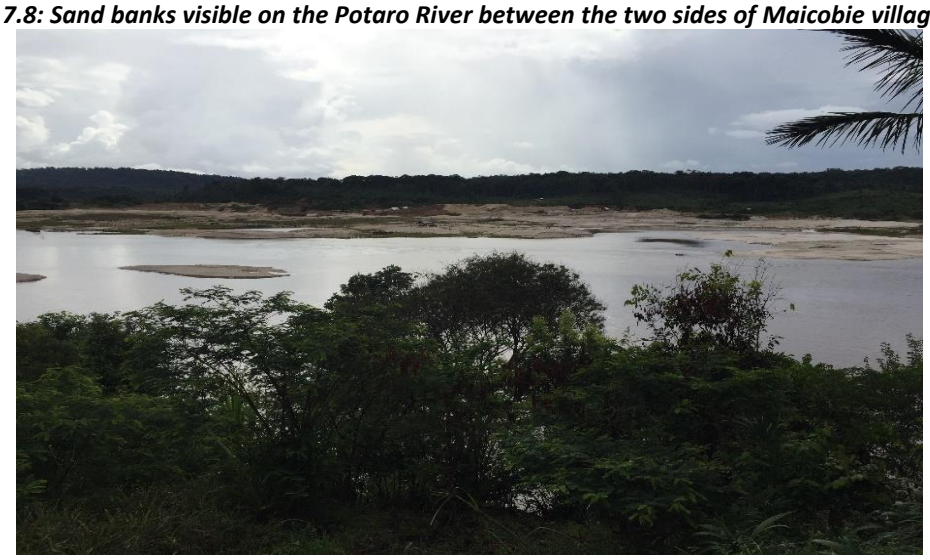
While other Amerindian villages have been more confrontational and pro-active in protesting this river mining activity[95], Maicobie has historically taken a more cooperative approach. Indeed, as with some 'save and except' clams, for the sake of maintaining cordial relations with the village, some *dragas* have negotiated percentages with village councils as compensation, even though they are not legally required to do so. Others have sourced labour and supplies from the village in order to foster shared interests. In early 2017, however, just prior to my visit, such arrangements collapsed in Maicobie in the light of significant damage to the river and its banks and the discovery of the claim maps illustrated in Images 7.6 and 7.7.

7.4.4. River claims and dynamic ecologies

As well as being disadvantaged by ecological disruption and the absence of compensation, the village is being further disadvantaged – and miners further aided – by the dynamic ecology of the river. Fluctuation in the river's level between rainy and dry seasons leads to a re-shaping of the physical landscape of the village, with acres of the village's land 'disappearing' as the river rises and the river itself effectively 'widens', illustrated by the changes in the river level between Images 7.8 and 7.9. As this happens, newly submerged areas – especially river banks and low-lying land (which are often rich in alluvial gold and yet would have been above the water level in the dry season) suddenly become accessible for *draga* owners with river claims on that part of the river. They thus move their *dragas* onto the flooded land and take advantage of the dynamic ecology.

[95] For example, Kako villagers in Upper Mazaruni actively blocked river access for miners passing through to reach their claims (Stabroek News 2012e)

Image 7.8: Sand banks visible on the Potaro River between the two sides of Maicobie village



Source: Author

Image 7.9: A draga mines submerged land that was previously a 'no-go' river bank and land claim

Source: Author

This activity is however often technically illegal because the newly-submerged land being mined invariably lies within 66 feet of the low water mark of the river (and is thus an outlawed zone for mining), or else it is someone else's submerged land claim[96]. However, the shifting ecology creates a regulatory 'grey area' that an already-under-staffed regulator is powerless to deal with. Indeed, the lack of physical markers indicating exactly *where* the low water mark is – and the lack of enforcement – mean that the village has

[96] In theory, in order to avoid illegality, *dragas* would have to pass through the submerged areas 66 feet either side of the low water mark and commence mining from those points onwards, but in practice, this would be extremely challenging to do.

little ability to stop *dragas* from drifting across the river – often at night, when GGMC officers do not visit – and extracting gold from the submerged land. Once the water level falls following the end of the rains, the land reveals itself to be further degraded, and the village's area to have been further re-shaped.

Conversely, though, the dynamic ecology can sometimes work in the village's favour: the shifting of Tiger Creek through sustained mining activity in the south of the village (shown in Image 7.10) meant that mining activity that was previously taking place outside the village's boundary (which was demarcated using 'natural markers' such as rivers or creeks) was suddenly within the village's boundary. Once falling within the village, the Village Council felt justified in asking the miner to pay a tribute to the village. As the Toshao admitted, "sometimes it works in our favour" (Interview 119).

Image 7.10: Mining activity has diverted the position of the Tiger Creek that marks the natural boundary of Maicobie village

Source: Author

7.5. Conclusion

According to the Guyanese articulation of the mainstream storyline on mining reform in Amerindian lands that was summarized in Section 5.3 of this thesis, problematic mining activity is being carried out illegally by non-indigenous miners, but this can be resolved through the enforcement of formal institutions. The communities themselves are meanwhile believed to favour development interventions aimed at helping them to generate non-mining income. This case study has operationalized a political ecology

perspective to problematize this storyline from a number of perspectives. Firstly, contrary to popular discourses, *both* indigenous and non-indigenous are contributing to a range of ecological and social impacts within Maicobie's titled land. Much of this activity is illegal and involves cooperative arrangements between the village and miners that have organically evolved and that are tolerated by the GGMC. These arrangements are however unstable, and when friction occurs, the village appears in a disempowered position vis-à-vis the miner. Development interventions targeting Amerindians are meanwhile failing to respond to the scale of involvement in mining or to assist with managing the effects of the village's chosen – and somewhat imposed – pathway.

Secondly, there is significant contestation around the structural basis of land tenure which is emblematic of polarized miner-indigenous discourses in Guyana. Although revealing valid claims on either side, the study found that the undeniable proximity of mining activity to the settled community means that, although technically legal, mining activities taking place in the village are having significant social and environmental impacts. This mining has been facilitated by idiosyncrasies in state institutions that have led to mineral properties being overlaid around and within indigenous land settlements. This is not only sources of moral and political objection; it also highlights the selectivity of the 'green' mining concept: even where technocratic requirements are being fulfilled, there are still important moral and political questions and grievances that are being ignored.

Thirdly, dynamic socio-ecological processes – both transboundary and cross-temporal – appear to be undermining the conception of formal mining spaces as inherently legal, stable, and manageable. These dynamic ecologies are combining with idiosyncrasies in state institutions and perennial enforcement problems to undermine the functioning of formal institutions in protecting villagers from the externalities of mining – both from outside the village's boundary, and from 'within'.

Overall, the case illustrates that the mainstream approach to green mining on Amerindian land appears predicated on misreadings of livelihood patterns and a failure to engage with local grievances and socio-ecological realities. The findings, facilitated by a political ecology lens, illustrate that the epistemological legibility of policy approaches may be critical in ensuring their legitimacy and effectiveness.

Chapter 8: Grey areas and green reform in the middle-Mazaruni

8.1. Introduction

The previous case of Maicobie showed how the mainstream approach to 'dealing' with mining on titled Amerindian land appeared to misread actual livelihood patterns and the socio-ecological realities of alluvial mining in a permanent settled community, while also failing to properly engage with a range of moral and political grievances within the community. This case study from the twinned untitled village of Kangaruma-Tasserene will show how a different institutional mining context further complicates the story about the meaning, function, and legitimacy of 'green' mining.

These additional complications primarily stem from the fact that, whereas the previous two case studies represented relatively 'stable' institutional contexts – that were either 'State' or 'Amerindian' lands – Kangaruma-Tasserene remains something of an institutional grey area. Although from a legal point of view, the villages effectively lie in an area of 'State lands' within the Mazaruni Mining District, they are also claimed by the Akawaio villages of Kangaruma and Tasserene as their ancestral lands. The continuation of mining 'within' their proposed title therefore not only represents a source of political contention; it is also practically undermining the villages' ability to protect themselves – or benefit from – mining activity taking place on their doorstep.

Overall, the chapter contributes to a further problematization of the technocratic mining reform storyline by showing how the task of putting 'green' mining into practice is in fact deeply entangled in land politics, rights discourses, and remote geographies. The case of these untitled villages once again underlines the capacity of a political ecology lens to recognize a range of normative concerns and to see environmental policy reform as a contested political process entailing struggles over legitimacy and justice.

8.2. Land occupation and titling

At the annual meeting of all Toshaos (or village leaders) from every Amerindian village in Guyana – the National Toshaos Council (NTC) conference – on 9th August 2012, after several previously-unsuccessful attempts to obtain them, two new titles were awarded to

Kangaruma and Tasserene. However, within 30 minutes of receiving the Absolute Grants in front of a room full of national and international observers, both documents and the rights they implied, were withdrawn. According to the Toshao of Tasserene, the titles were "taken back moments after… never to be seen again" (Stabroek News 2015c). As of 2018, neither village has yet received its title, denying them the security to plan their futures and to protect themselves from the mining activity that has – as everywhere in Guyana in the past decade – continued to encroach on the region as easier deposits become exhausted elsewhere. As Tasserene Toshao, John Spencer told a newspaper in a 2015 interview[97]:

> Why we are so concerned about the situation? There is a lot of concessions still [being] given out by the GGMC. They have given out this land. We are in a concession. The village is in a concession at this point. So right now if dem' people come with their equipment to work in that area, we have to move. I don't know what we will do… at the moment, our village is in a concession.

As to why the titles were withdrawn, villagers alleged that powerful miners within the GGDMA threatened to sue the GGMC if they granted the title, and the GGMC intervened to get the titles withdrawn. Neither of these rumours could be confirmed, and the government has only ever cited 'technical' issues for the withdrawal (Interview 54). The issue was drawn into further controversy in 2015 when it was alleged that a newly-elected Junior Minister for mining was a property holder within the proposed titled land area (Guyana Chronicle 2015). For the village, this suggested that there may have been additional political-economic forces blocking their title. But how did such contention around the village titles arise? And what are the implications for mining activity and for notions of 'green' development?

8.2.1. Shared occupation

As with the previous case of Maicobie, understanding the discursive and political conflict around the case of Tasserene and Kangaruma and the unsatisfactory situation for both miners and the community lies in first unpacking the history of the occupation and use of the land. The middle Mazaruni region where Kangaruma-Tasserene is located is one of

[97] See Stabroek News (2015c).

the original mining districts to have been established in 1942 by the colonial government (Lowe 2003). Although not as intensely covered in properties and dredging activity as other areas on account of its relative remoteness and the financial costs associated with mining in this area (it took me seven hours to reach Kangaruma from Georgetown on a jet boat), it has nonetheless been the site of mining since the late 19th century. Initially, this activity focused on the river, but since the 1990s it has increasingly moved onto the land. The scale of mining activity meant that several major landings became established, one of which – Issano – lies 'within' the village's current proposed title.

The villagers making up Kangaruma-Tasserene today belong predominantly to the Akawaio tribe who are originally from the Upper Mazaruni region of Guyana that borders Brazil (Hennessy 2013). Although some[98] argue that such communities moved further down the Mazaruni River in the 1950s to firstly escape from newly-arriving miners and secondly to escape an impending hydropower project in the 1970s, villagers themselves reported that they left the Upper Mazaruni and settled further down the river to seek employment in the mining sector. As well as Akawaio – and as with all Amerindian villages in Guyana – there are villagers from a number of other tribes living in Kangaruma-Tasserene, many of whom also came to the area from the 1960s in order find diving work.

Although the conception of 'communal' land in the Amerindian Act assumes a somewhat static, urban, and linear conception of land occupation, the historical social and economic life of Amerindian *tribes* (as opposed to *villages*, or *communities* – which, for some, are merely latter-day attempts to discipline Amerindians into Christian-socialist settlements) assumes a far more 'roaming' and dynamic character (Hennessy 2013). Indeed, whereas Maicobie has always been centred on a geographically-compact area, Kangaruma-Tasserene has always been a more diffuse collection of homesteads. These homesteads were scattered across the vast territory either side of the Mazaruni River, and villagers would engage in a range of livelihoods, especially farming, fishing, and hunting. From the 1960s, males would migrate several times a year – for months at a time – to mine in the surrounding area.

[98] Such as Colchester et al. (2002).

The strong religious grounding of the Akawaio people (they adhere to a puritanical, syncretic faith known as Alleluia) meanwhile led many of the villagers to actively seek remote locations for their houses far from the perceived debauchery of the mining culture that developed around the landing at Issano (Interview 107). For the sake of satisfying the definition and characteristics of a 'village' as defined by the titling process laid out in the 2006 Amerindian Act, the villagers however increasingly clustered themselves into more 'conventional' fixed communities.

8.2.2. Titling history

Whereas a few Amerindian villages in Guyana were able to secure their titles between the 1970s and 2000s, it is notable that it took until 2007 before Kangaruma-Tasserene launched its own title bid. This is partly because of a lack of funding, which was always scarce for Amerindian land titling processes, which are both expensive and politically contentious (Lemel 2001). However, as with the delays in other land applications, some blame indigenous organizations and the government for failing to educate communities about the application process (Interview 28). As one of the lawyers who drafted the Amerindian Act argued in a letter to the Stabroek News (2013):

> Unless the Amerindian community claims the "traditional lands" and obtains title, the land will remain State land. When Amerindian communities delay in claiming their "traditional lands" other people can (and do) acquire rights over that land. The Amerindian Act 2006 cannot force Amerindian communities to claim their "traditional lands." It can only force the Minister to respond to the claim, when it is made.

In the Middle Mazaruni, as elsewhere, however, some villagers yet feel aggrieved that they are made to 'request' their land from the state at all, when, in their eyes, the land was always theirs. These discursive disagreements are doubtless sharpened by the frustrations and perceived betrayals of the intervening years. As villagers from Kangaruma-Tasserene declared:

> I don't have to request or apply for my land title… I live as an Amerindian… I'm a hunter, a fisherman… like my grandparents lived… I don't have to live like y'all… y'all coastlanders… But I living under the blocks right now… like the mathematical blocks, over the land... (Interview 101)

> We titled the land by ourselves… we don't think we should have to get a 'block' or 'title' from the government to prove it: the land belongs to here… it's just because we don't want the coastlanders bothering we, and moving we out that we're applying

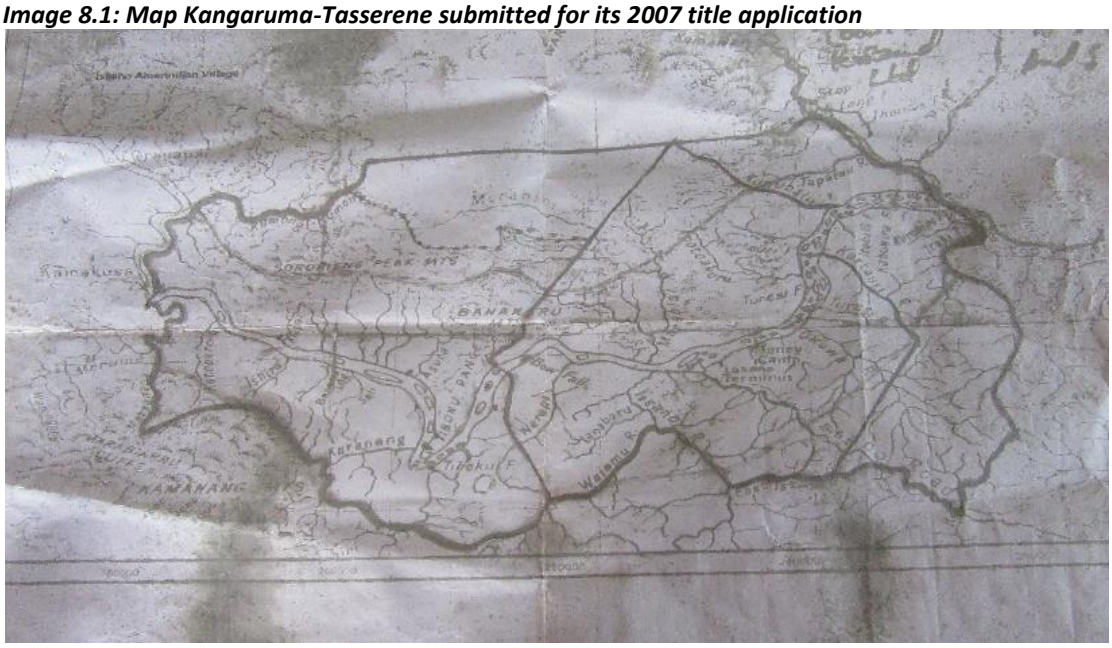
> for the title… We already moved here (to get away from other things)… we don't want to move again… (Interview 113)

Despite these discursive disagreements, once the Amerindian Act of 2006 formally laid out a process for villages to apply for their Absolute Grants, the village began assembling its case. However, what appears to have particularly delayed the application at this point was the fact that there was no mention in the Amerindian Land Titling Report of 1969 of any settlement at current-day Kangaruma-Tasserene – even though nearby Issano landing is documented as having been in existence since at least the 1940s as a settlement used by pork knockers visiting the interior to dive for diamonds (Josiah 2011).

Although such an omission may seem trivial, the strength of village applications rests on evidence of continuous occupation of lands – something that is often difficult to prove (Bulkan 2006). According to villagers, the reason that Kangaruma-Tasserene was left out of the Amerindian Lands Commission report of 1969 – in spite of being in existence – is because the representative for the area, a man named as Michael Murphy, a Wapishana from the Rupununi, did not attend the representation in Georgetown on the day of submissions in 1966, and so Kangaruma-Tasserene was not recorded as part of the land titling process (Interview 105). For villagers and other Amerindian advocates, this is just another example of the arbitrary processes through which Amerindians rights are denied.

When the villagers initially applied for their land title in 2007, they applied for one whole sprawling area of more than 500 square miles called 'Tasserene', as illustrated in Image 8.1. At that time, the main community was located at what is now known as Tasserene, a community just across the Tasserene River from the landing of Issano. The villagers explained that they drew up the map of the village title using natural features and by considering which areas they would need for fishing, hunting and agriculture in order to continue their way of life. This initial application was rejected, with the government at the time claiming that the area of land being requested was too large, with the Minister of Amerindian Affairs claiming at the time that a community of just 350 people could not expect to receive a title that was "2 or 3 times the size of Barbados" (Interview 105).

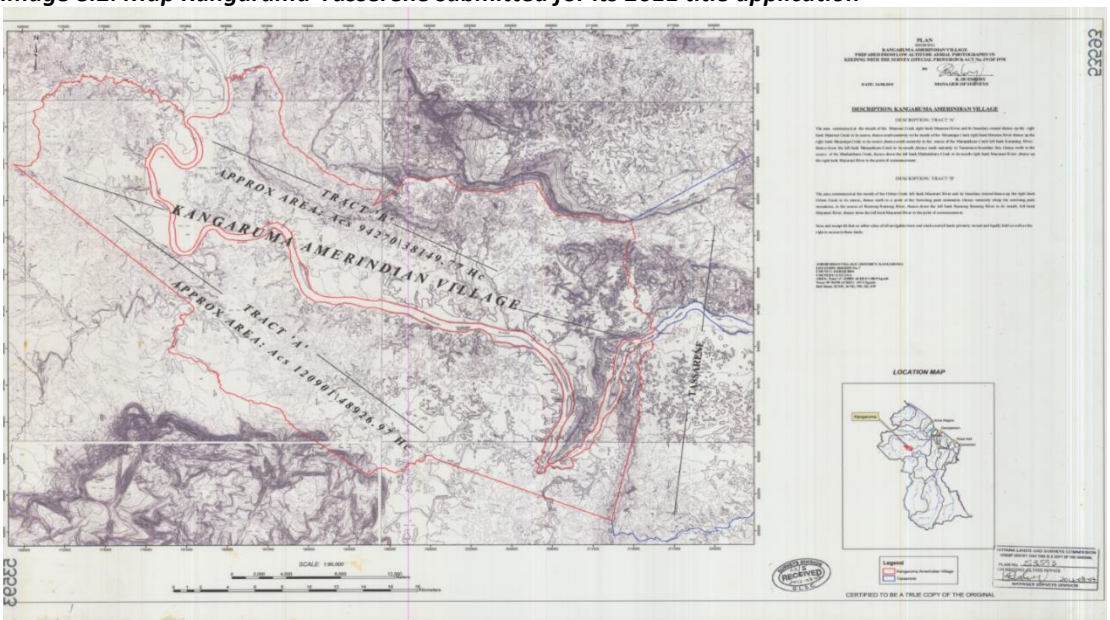
Image 8.1: Map Kangaruma-Tasserene submitted for its 2007 title application



Source: Author

The villagers decided to try again for their title in 2011, seeing an opportunity around election time. For this application, as per Image 8.2, they agreed to a split in the village, this time applying for a reduced total land area of around 320 square miles as two separate communities, the original 'Tasserene', and another, 'Kangaruma', which was previously just a 'satellite' village housing only a handful of dwellings. To do this, they had to effectively 'create' a separate village, Kangaruma, of 150 people or more, and elect an additional Toshao and Village Council.

Image 8.2: Map Kangaruma-Tasserene submitted for its 2011 title application



Source: Author

For some commentators, the decision to re-organize the community in this way confirms the arbitrariness of the conception of 'occupation' that defines Amerindian land and extension applications. Indeed, for these critics, it shows that rationales for bequeathing land are distantly removed from the often-used claims of 'millennia of occupation'. As a local miner argued:

> Because they were not documented, so to speak, so one set of people can represent the 50 in 10 different places… One set of people… they were smart enough to do that… So you get all these satellite villages going up… With Tasserene… and Kangaruma… Now both of them want land title… You see? There was just 3 or 4 people… at Kangaruma… But when the other family moved, and went and opened the Kangaruma thing, they hadn't been there for 25 years! (Interview 22)

However, such a move by the village was technically within the terms of the 2006 Amerindian Act, as the Act states that to be considered a 'village' the settlement must have been in existence for more than 25 years or have over 150 occupants.

The splitting of the two villages led their applications being finally accepted – albeit at a further reduced area – and they went to the NTC conference in 2012 to collect their Absolute Grants. As a result of the abrupt and unexplained withdrawal of the titles, however, the villagers have since been living on untitled land (a 'proposed' title only) that is effectively still 'State lands' within a Mining District. This effectively gives the villages no extra security or rights than they would get if they were literally squatting in a Mining District, which is what, in the eyes of the law, they are doing. In spite of the lack of title, however – and in recognition of the existence of a community – in 2016 the central government built a school in Kangaruma, which some villagers saw as their first step to recognition (Interview 106).

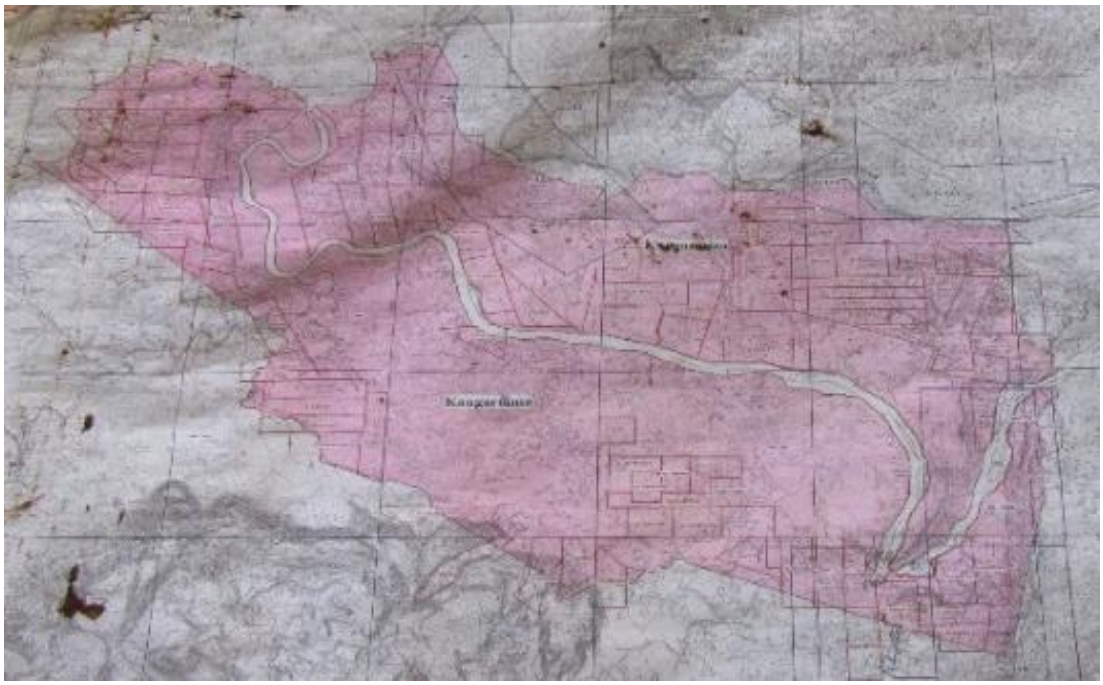
For other observers, however – not all of whom were miners – withdrawing the title was the correct decision, as it prevented the kinds of conflict that ensued following the issuing of a title to an equally 'young' middle Mazaruni community in Isseneru (Kaieteur News 2013b). As one prominent interviewee stated of the decision to grant the title to Isseneru:

> Isseneru was pretty much empty, and then the miners came, and the Akawaio moved in… So, Isseneru started off as a mining entity, Akawaio and Wapishana came up… It's not a traditional Amerindian area… I think (Minister) Carolyn Rodrigues… made a serious mistake when she granted that title, because there really were no… not much in the way of grounds for doing it… (Interview 28)

8.2.3. The encroachment of mining

By the time of the NTC in 2012, Kangaruma-Tasserene had become inevitably embroiled in mining activity. Although not as covered in mineral properties – or actual mining activity – as other proposed titles, as Image 8.3 displays, there were still a large number of properties (in red grid lines) within and around its proposed title (shaded in pink).

Image 8.3: GGMC map from 2013 showing distribution of mineral properties within Kangaruma's proposed title



Source: Author

After all, in spite of the remoteness, the lack of infrastructure, and the poor prospecting information that defined the middle Mazaruni area of Guyana, there had been a gradual encroachment of formal mining properties in and around the Kangaruma-Tasserene village area since the late 1990s. These encroachments were monitored powerlessly by the villagers, as explained in a 2015 newspaper article[99]:

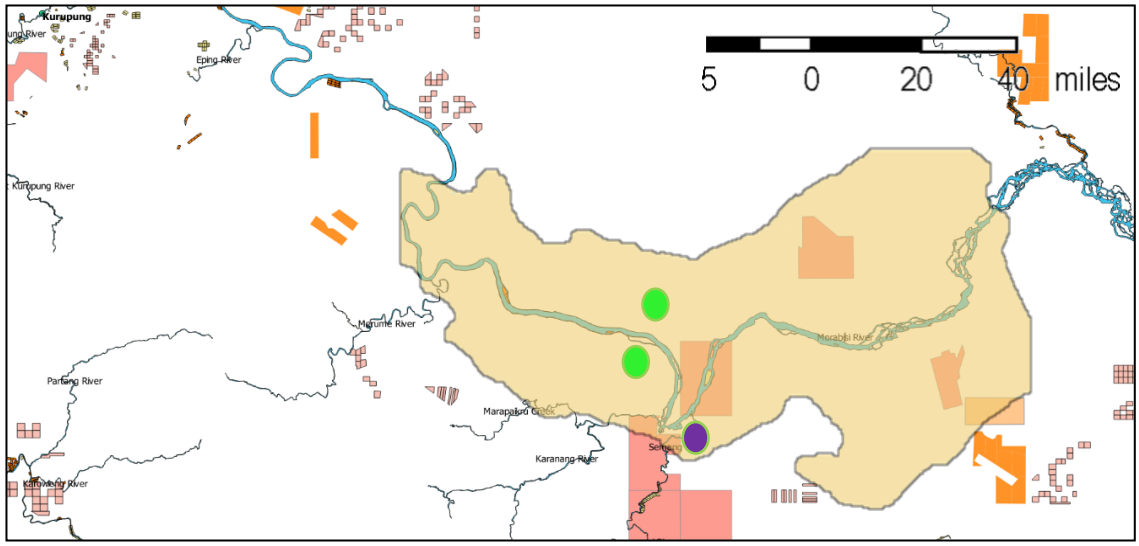
> In 2014, there were 134 medium-scale prospecting and mining permits on Tasserene's proposed titled area and in 2015 this rose to 380. Earlier this month, the Mines Officer told them of the additional 60 prospecting and mining permits within the proposed area. Additionally, five large-scale prospecting and mining permits on the proposed titled area were added to the GGMC map for this year. In Kangaruma,

[99] See Stabroek News (2015c).

> there are 121 medium-scale prospecting and mining permits and two large-scale which amount to about three quarters of the community's proposed titled area

Figures 8.1 to 8.4[100] illustrate this gradual encroachment of mineral properties into the area. As the proposed GIS layer showing Kangaruma-Tasserene's proposed village title would not be made available despite repeated requests[101], an approximate yellow layer outlining the 2011 'proposed title' has been superimposed onto the following maps. The green dots represent Kangaruma's main settled areas where the majority of the community live and the purple dot represents Tasserene's main settlement. The green dot to the north of the river is where the school, health centre, and village shop is located, and could be considered as Kangaruma's 'main' settlement. This was where I stayed during my visit. Note how both green dots become gradually surrounded by mineral properties over time.

Figure 8.1: Mineral property distribution in the Kangaruma area in 1999



[100] All maps are GIS layers adapted by the author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

[101] This is likely due to contentiousness over the status of the village's title application.

Figure 8.2: Mineral property distribution in the Kangaruma area in 2005

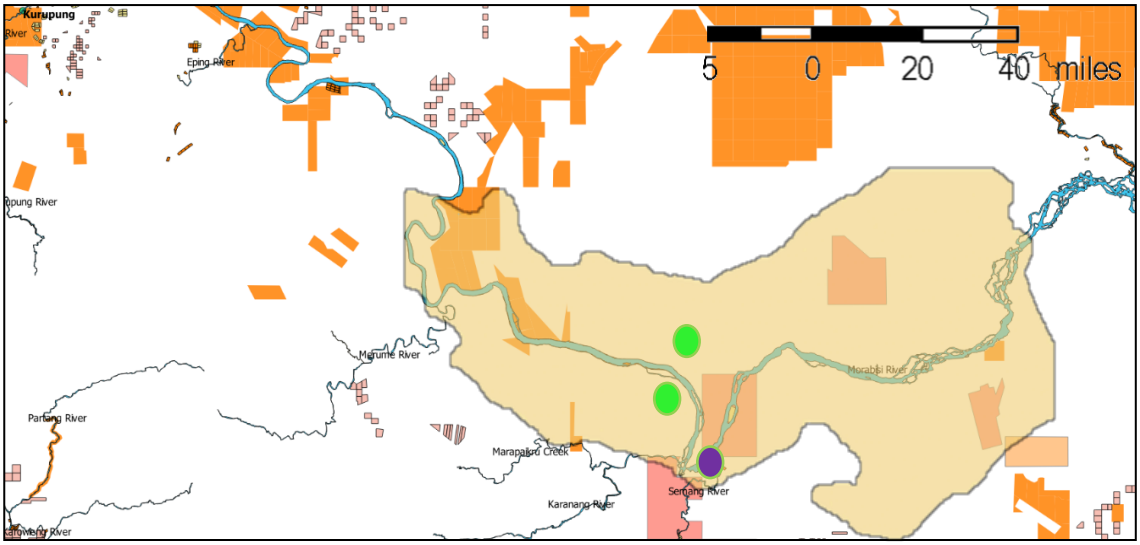


Figure 8.3: Mineral property distribution in the Kangaruma area in 2010

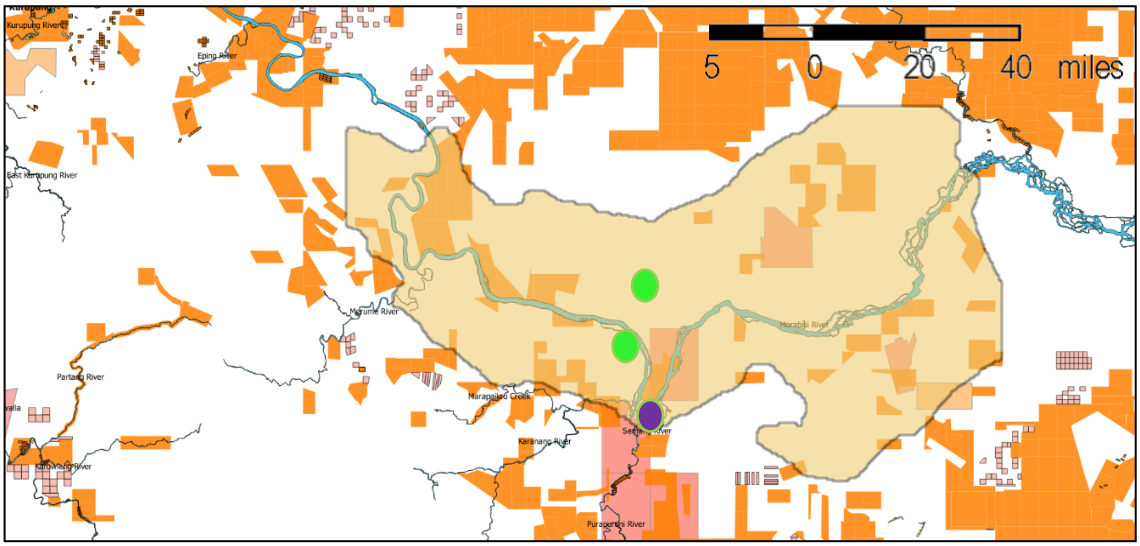
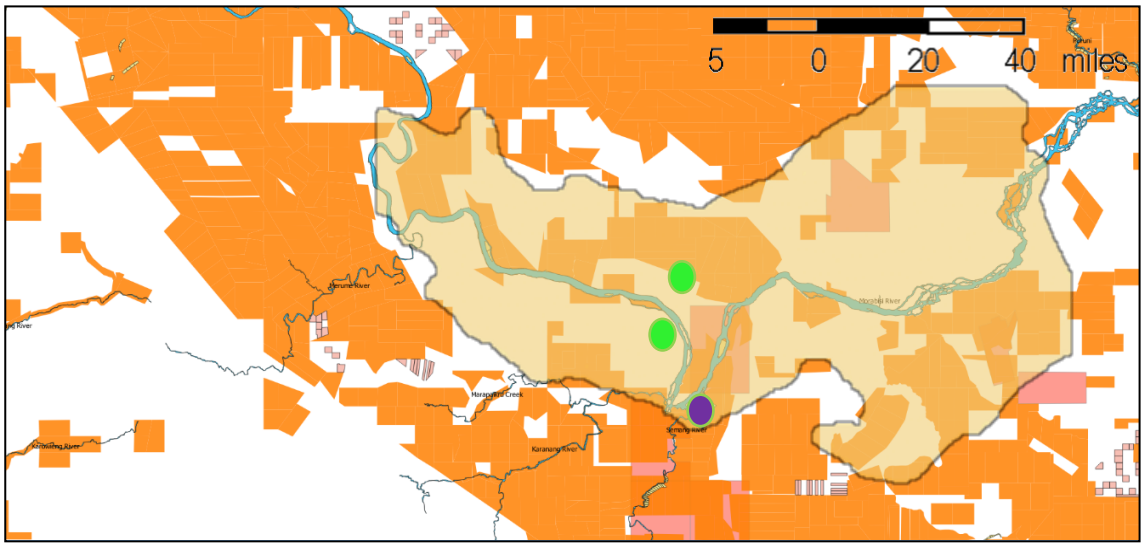


Figure 8.4: Mineral property distribution in the Kangaruma area in 2015



The extent of mineral coverage in 2015 (Figure 8.4) illustrates the increasingly problematic nature of issuing the title to the village. As has been seen with other villages, particular Isseneru, issuing titles to villages that already have significant pre-existing properties located within them means that they come into legal-being as already-contested spaces. This was seen in the previous chapter with Maicobie, which is locked in an ongoing stand-off with miners over compensation and access.

What perhaps explains Kangaruma-Tasserene's failure as much as it explains Isseneru's success was that when Isseneru applied for its title in 2005, the gold price was only US$513 per ounce, and there were only 1,504 registered dredges nationwide. As was examined in Chapter 4, by 2012, gold had rocketed to US$1,658 per ounce, dredge numbers had risen to 4,686, and the appetite for fresh new mining lands had accelerated. In addition to this official activity – and as has been conveyed throughout this thesis – 'official' records of mining activity are often a very poor indicator of *actual* mining activity, and anecdotal reports by Kangaruma villagers suggest that several waves of illegal Brazilian miners have also entered – and subsequently fled – the area in the past decade, escaping regulation, while leaving a trail of environmental degradation in their wake.

8.3. Unpacking discourses on legitimacy and livelihoods

While the absence of documentation supporting their claims of occupation invites scepticism about the validity of the claim, the considerable land area requested invites perhaps understandable cynicism about the grounds and motivations for the claim. For

some, attempting to lock up such a large tract of land suspected to be rich in gold and diamonds is nothing but a 'resource grab' (Interview 20). Even a GGMC officer I interviewed was aghast at the extent of Kangaruma-Tasserene's claim, stating: "they are claiming an area equivalent to the land area from Bartica to Mahaica![102]" (Interview 87).

For miners, such claims have gathered credence as they have observed other 'young' communities such as Isseneru (which was 'established' by other Akawaio villagers in the 1980s, further up the Mazaruni River) flourish into fully-functioning mechanized mining communities with dredges and earth-moving equipment registered with the GGMC. Miners therefore predictably welcomed the securing of their interests that accompanied the state's decision not to grant a community of several hundred people (Kangaruma-Tasserene) an area spanning 100 miles of a mineral-rich area. As one miner succinctly put it:

> Look, we appreciate your autonomy, and all that you want… but… we cannot allow 250 people to snatch away X millions of US dollars for 250 people… when you've got… 200,000 people in Linden or somewhere… Because there's no economic activities in doing good… You're dividing the country, you're creating an equation there (Interview 22)

8.3.1. Becoming a mining village?

Whether taking advantage of mineral wealth was part of the motivation for the original claim or not, it is evident that many villagers, following years of exposure to the mining sector, have begun to consider it a possibility for their own villages, even as they are reluctant to admit it. As a Kangaruma villager conceded:

> The only way is mining, for people to develop, or, lumbering. We're not saying 'no' to mining, but it should be done in a controlled way, sensitive to our concerns (Interview 103)

Not all villagers shared this perspective though, and the more religiously devout members of the community were desperate to avoid inviting mining into the community, even while some male members were regularly migrating seasonally to mine elsewhere:

> We were at Tasserene before, all of us… Many things happen there… at Issano… Older people saw the influence of Issano landing on the current generation, alcohol,

[102] Bartica is a town in the Mazaruni region and Mahaica is a town located around 50 miles south of Georgetown along the East Coast.

> drugs… and because of our traditional religion, we re-settled at here. Now, Tasserene is the 'industrial' community, and Kangaruma is the farming community (Interview 107)

But while the principled stance of the villagers who fled from Issano landing to form the village of Kangaruma has led them to resist a mining pathway, the same cannot be said for Tasserene, which, by some accounts, has recently "got into mining in a big way" (Interview 107). As a Kangaruma villager claimed:

> Tasserene have welcomed mining… villagers are working on coastlander dredges, and are benefitting from it… Even as they are complaining about water pollution, they're contributing to the water pollution… they have some of their own dredges. Almost everyone is doing mining there now (Interview 107)

The fact that Tasserene villagers have found it harder to resist mining is probably a result of its proximity to the Issano landing but is also perhaps due to the leadership of the Village Council, which seemed not to share the same level of religiosity as that at Kangaruma. As one Kangaruma villager observed, it could also have been because they wanted to 'grab something for themselves' while the resources were still there (Interview 103).

Tasserene's reluctance to be forthcoming about its involvement in mining, however, could be related to what I sensed was a common fear among Amerindians in today's Guyana: namely, that their land claims would be undermined if it was discovered that they themselves were mining on their own land[103]. For example, if it was found that Tasserene villagers were themselves contributing to degradation on the Tasserene River that they were blaming on 'coastlander' miners from Issano (something several miners in Issano claimed was going on), it would potentially undermine villagers' moral complaints. Several villagers in Kangaruma agreed that Amerindians were generally concerned to appear to be doing the 'right things' in the eyes of observers in order to maintain a consistent cultural representation of themselves. As these Kangaruma villagers explained:

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[103] Tasserene's alleged foray into mining also possibly explains my failure to gain permission to conduct research in the village from the Tasserene Village Council, which, in spite of repeated requests, refused to respond to my communications. When I raised this issue with villagers in Kangaruma, I was informed that Tasserene probably did not want to deal with the scrutiny of a researcher.

> Yes, people are frightened to get into mining. The government is telling people them not to do it, not to do the wrong thing… Telling us, like, "you can't be cutting your wood"… They've been telling us not to mine… People friken fuh[104] do the wrong thing (Interview 103)

> I've been encouraging the VC (village council) to do it (apply for mining claims); before land gets taken… But they want to wait until they have the title… so it doesn't look bad… (Interview 110)

Above all, these concerns reflect the extent to which mining has come to be so powerfully constructed by NGOs and the state as an almost shameful activity rather than what many argue it really is: a commonplace livelihood activity that many Amerindians both reluctantly – and willingly – engage in (Gregory & Vaccaro 2015; Hennessy 2015).

8.3.2. Remaining 'traditional'

Despite the evidence that indigenous villages, including Tasserene, are becoming involved in mining, Kangaruma's explicit motivation for its claim appears to adhere more closely to the 'approved' motivation favoured by the Ministry of Indigenous Peoples' Affairs and advocacy organizations – of wanting to 'lock up minerals' for conservation purposes. Indeed, as a former Toshao at Kangaruma explained, their motivation for claiming such a tract of land "on both sides of the (Mazaruni) river" was to protect it from mining activity and preserve the river life (Interview 115).

This claim appears to have some authenticity, and, as far as I could detect (although it would be impossible to say for certain), despite the fact that many of its male members were periodically leaving the village during quiet periods in the farming schedule to seek employment on mining operations, Kangaruma was not yet fully involved in mining activities on its own land. Livelihoods in the village meanwhile appeared to remain closely bound to traditional modes, with cassava farming and production central to everyday life, as illustrated in Images 8.4 and 8.5. As one villager explained:

> Households pick a plot of land to farm and clear it themselves… a 'church' farm is communal and used for festivals, events, special occasions… Families cut a new farm every year…they get to keep/sell produce to each other… No one has

[104] Frightened to.

> permanent farms… everyone is constantly looking for a better patch… Other business is fishing, hunting, cassava milling… (Interview 103)

Image 8.4: A cassava plot within Kangaruma village

Source: Author

Although there appeared to remain a sincere wish to avoid a mining pathway and to preserve the Akawaio culture, younger members appeared keener, not only to exploit mineral resources and earn cash incomes, but also to continue benefitting from the important economic role that outside miners play in the village economy. One young villager concisely explained the dilemma:

> We want rid of them miners! But then who will buy our produce and provide our youth with jobs?! (Interview 110)

Image 8.5: A cassava-processing unit in Kangaruma village

Source: Author

8.3.3. Beyond dichotomies

Regardless of the livelihood practised by villagers though, I sensed a strong moral underpinning to the village's land claim that can be separated into two arguments. Firstly, as with the small miners from Chapter 6, villagers argue that, in the light of the massive concentration of mineral property ownership nationwide, why shouldn't Amerindian villagers be given their land rights? As one rhetorically asked:

> If Alphonso can get that much land, and he's just one person, why can't 300 people here? Both situations are unfair… (Interview 106)

Secondly, and relatedly, they argue that, if Amerindian people's 'lifestyles' are as crucial to the role of national conservation and resource management as the government so often claims within its 'green' discourses, why can't the village be given the legal right to steward the forests?

Further though, I sensed a pragmatism among villagers in Kangaruma that is often missed in simplistic discourses about 'modern' and 'traditional' activities that underwrite debates

on indigenous land titling and livelihoods[105]. Indeed, while debates on indigenous identity typically seem to lurch between whether Amerindians should be given land titles for ethnic reasons (because they are ethnically Amerindian) or cultural reasons (because their lifestyles and livelihoods are qualitatively more *conservationist* or *ecocentric* than the modern lifestyles of Westerners or coastlanders), many villagers saw the issue in terms of a practical autonomy:

> People assuming Amerindians are pre-modern and don't need medicines and cash incomes etc. but this is a modern state… Even if villages are thinking about gold, it doesn't make a difference. We should be able to use resources on our lands anyway we want… Being an Amerindian is not about mining or not, it's about being independent… we don't need to buy food, gas, light, etc. We do as we please… (Interview 115)

Before leaving Kangaruma, I asked the village council whether they thought indigenous peoples should be entitled to mine on their titled land if that is a decision democratically arrived at by the village itself – as was the case in Maicobie. They agreed that they should, and they revealed that they had every intention of doing exactly this once they had secured their title. Such an attitude illustrates that – unlike the typical indigenous advocacy framings – securing communal tenure is not necessarily associated with a need to reject modernized development pathways but can sometimes be a way for indigenous peoples to secure a legal basis to pursue extractive activities and 'hybrid' modernities (Milne 2013; Killick 2018).

8.4. Lack of control, benefit, or participation

While impacts *within* Maicobie's title could be disaggregated by those being caused by illegal activity that the village was sanctioning and benefiting from and legal activity taking place on prior claims, in Kangaruma-Tasserene's case, such a distinction is not possible. Its untitled status means that there is no legal distinction between the 'inside' and the 'outside' of the village: all mining activity is taking place on State lands and the miner is only answerable to the GGMC, not the village. The lack of legal status has three interlocking impacts: i) the inability of the village to control or plan what takes place on

[105] This is the same dichotomous view that has seen repeated development projects fail to engage with the reality of Amerindian mining activities, as was observed in the previous chapter.

its land; ii) the inability to benefit from past, present, or future mining activity; and iii) the inability to access resources or participate in green or other development programmes.

8.4.1. Lack of control

> What is really worrying is that at the moment… the miners, the claim holders, or the block owners, they have the power over the council because we don't have the title so we don't really have much say in it. According to what the GGMC official told us, once the title is not issued then we don't really have much say as to the mining because the GGMC has the authority to issue mining permits to persons and knowing that we don't have any title as yet, we don't really have any say pertaining to the mining… So our power is very weak within the council, when it comes to mining (Ridley Joseph, Interview in Stabroek News (2015c))

8.4.1.1. Current impacts

As with Maicobie, Kangaruma suffers a range of such environmental impacts caused by both historic and current mining activity occurring within and around the proposed title. These impacts are an inevitable consequence of both its location within a mining area and the weaknesses of enforcement – both the result of under-capacity and corruption – that have been extensively explored in this thesis. In Kangaruma's case, this degradation (illustrated in Images 8.6 and 8.7) includes the destruction of fish stocks and hunting grounds, pollution of waterways and rivers – which affects drinking water and fishing – and the degradation of forests and traditional thoroughfares and trails. The decline of fish stocks and destruction of hunting grounds means villagers have to travel further to fish and hunt, spending more on fuel:

> Mining is destroying our herbal medicines, our beautiful forests, like the crabwood tree…We are trying to preserve creeks, because the Mazaruni, Semang (Rivers), are polluted and contaminated…A miner was even prospecting near the Asura Creek recently … where we fish (Interview 104)

> They have different understanding of land… miners' short-term mentality doesn't appreciate the impact on forest dwelling and permanent communities… These people come and go but you've got to live here for generations (Interview 107)

In Tasserene's case, the impacts are more severe due to the village's closer proximity to mining activity and the greater number of operations. Unlike Kangaruma, whose drinking water supply is for the moment secure, for example, Tasserene's is under threat from tailings pollution. As a Tasserene counsellor complained:

> The lack of title means lack of access to rights and protections… There have been years of promises. But now prospectors come in even though they knew from GGMC that there was an indigenous village there… they don't care (Interview 114)

Image 8.6: A villager from Kangaruma looks over a medium-scale mine within its proposed title

Source: Author

Image 8.7: An arrow indicates where the creek becomes turbid as a result of tailings pollution

Source: Author

The lack of ability to control ongoing mining activity is particularly galling for villagers in the light of the government's continued rhetorical celebrations of the ability and willingness of Amerindians in Guyana to protect and conserve the environment for future generations (e.g. most recently in Government of Guyana (2017)).

8.4.1.2. Vulnerability to future threats

As was examined in the previous case, despite its limitations, Maicobie's Absolute Grant at least gives it the ability to veto any future mining activity within its titled area. If a small-scale or medium-scale miner was interested to begin mining within Maicobie village, the village would be able to sanction or refuse this activity with a two-thirds majority. Kangaruma-Tasserene's lack of title however means that it lacks such an ability.

The village has witnessed an increasing number of properties being added to successive mineral maps that they have collected from the GGMC over the past few years. Despite reassurances from several GGMC officers that new mining properties are not supposed to be issued on 'proposed' land, these have been shown to be hollow promises intended to quell tensions, rather than a legal measure. Indeed, when I questioned a GGMC officer about this pledge not to allow new properties within proposed areas, they admitted that this was only a guideline, and was not being following in practice. Although Joe Singh tried to enforce such an armistice on new properties within proposed lands in 2012, in practice, the GGMC is not prevented from giving out new mineral properties in areas that are as-yet untitled, as they are still legally considered as 'State lands' (Stabroek News 2012d).

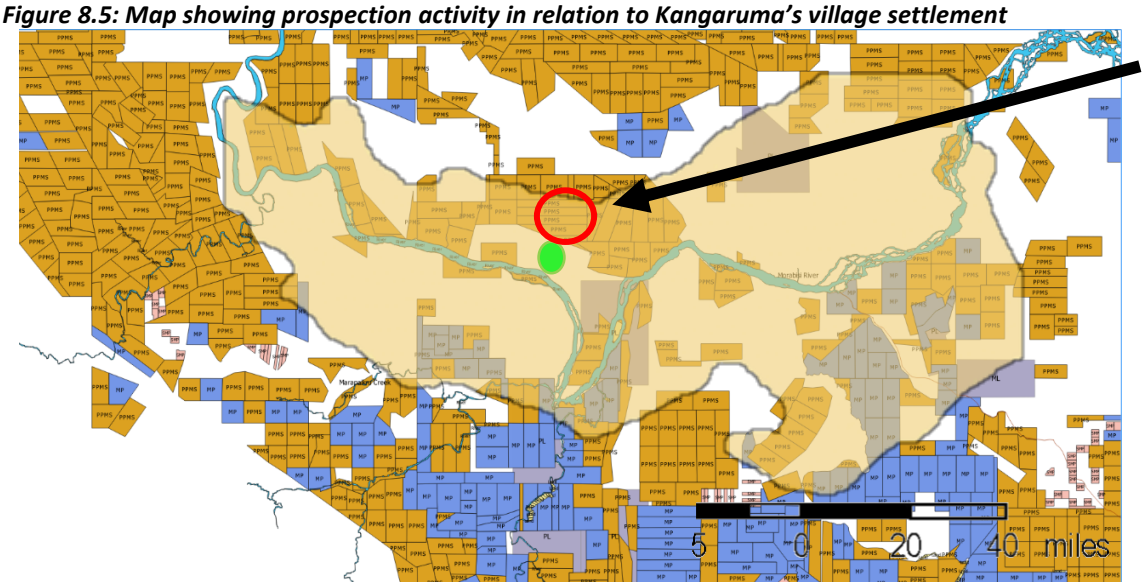
Such a scenario means that, technically, a miner could locate a property anywhere in the proposed title, even next to the school or the health centre. Concerned villagers explained in an interview with Stabroek News (2015c):

> What is really troubling is that…the community falls within a block that was issued and now we have the majority of blocks that was given in the immediate environment of the community… If mining occur within that area, it gon' directly affect the community because the blocks are not like at the end of the boundaries, it is direct around the community itself

These fears appeared to be coming to pass shortly before my visit to Kangaruma in April 2017 when villagers discovered that someone had been prospecting the land on the north

side of the river near to the Asura Creek – the main source of drinking water for the village – marked on Figure 8.5 in the red circle. While villagers were interested in the idea of 'locking up' land within the proposed title so that miners could not take out further concessions on their land, they conceded this would be ultimately beyond their financial means.

Figure 8.5: Map showing prospection activity in relation to Kangaruma's village settlement



Source: GIS layers adapted by author using QGIS from data downloaded from Guyana GIM Unit portal. Accessed at http://data.gim.gov.gy/

As well as these fears about future mining impacts, the lack of ability to control or anticipate future land use also means that their own development planning and aspirations are compromised. Uncertain which land is going to be available for them – or otherwise degraded or locked up – in years to come, they are reluctant to invest in any land-based activity, such as logging or mining, that they may later find out is taking place on someone else's claim. Indeed, as with Maicobie, the GGMC has been unable to provide the village with an up-to-date list of current claims. Similarly, they are reluctant to invest time and energy in farming activities that are going to be disrupted by future mining activity. A Kangaruma villager explains:

> Having a vision of own community, maybe that's the only way we could establish the village. But we need title. The village does have a development plan… but currently, has no control… We wouldn't give a 'free for all' for mining if we had a title (Interview 105)

8.4.2. Lack of benefit

Not only can the village not control or veto mining activity on its proposed title, but it is also denied the opportunity to benefit from either current or future activity. As was seen in the previous chapter, Maicobie has used its moral case as the title holder to enter into cooperative (though illegal) arrangements with pre-existing claim holders, while also inviting new miners onto their title. Further, the securing of the title saw several concession-holders even give up their properties out of respect for the village's new status.

Untitled villages such as Kangaruma are on the other hand in a weaker moral and political position to do this, with most miners feeling under no obligation to compensate what they see as a non-legal occupier devoid of state-sanctioned rights. Though a few operations I encountered in Kangaruma were providing jobs for villagers by sourcing labour from the village (as in Image 8.8), they were under no obligation to do so and so these arrangements are extremely tenuous and unstable.

Image 8.8: A small operation works legally within Kangaruma's titled land

Source: Author

Although the Village Council claims not to be investing in mining, there were rumours that a few small 4-inch dredging operations had recently started to be being operated by villagers within Kangaruma's proposed title. These rumours are comprehensible in the

context of the pressure that villagers feel under to extract some minerals before they all get extracted by others. As one Village Council member explained:

> How will Kangaruma benefit in future if gold has been already extracted already from our proposed land? Nothing's been left there… If we want to do that… to mine… in future… the gold will be all gone… So, even if we decided to go into mining, nothing would be left to benefit from… Where is it we're going to find our blocks? Every day they are seeing minerals extracted and it breaks my heart… (Interview 103)

8.4.3. Lack of participation

A final dimension of Kangaruma's exclusion is that its untitled status limits its ability to access state and other international funds that could be used to fund livelihood projects, with many of these funds only available for legally *titled* villages. At least one development project in Tasserene had reportedly not happened as a result of the village not having the title to its land (Stabroek News 2015c). Paradoxically, while donors and the state are on the one hand encouraging forested communities such as Kangaruma to pursue a farming and ecotourism based-development pathway rather than one underwritten by extractives, the community itself is being denied full participation in so-called 'green' projects such as REDD+ or FCPF. One project to have been successful was funding for a shop that, ironically, survives by selling supplies to miners in the area (Interview 104).

This lack of concrete provision of resources is fuelling the outward migration of male (and some female) villagers towards mining areas. While bringing important cash into the village, as with Amerindian villages all over Guyana, these migrations are however proving disruptive, and for some are fuelling the rise of a range of social problems, such as alcohol and drug abuse, while also contributing to an erosion of the family and farming-based culture. The irony of this lack of access to resources is not lost on villagers who have become cynical about the dissonances between celebrations of Amerindian knowledge and conservation practices on the one hand and what they see as the systematic failure to equip fully villages with the resources and rights to be able to put this knowledge into practice. As the Kangaruma Toshao bemoaned:

> The government should do something… At least this present government because we voted for change… At least … I still looking out for change, at least not from bad to worse… We looking for betterment. We are there and we are not owners [but]

> we are catering for hundreds of years to come for our [future] generations and this is how we deh. We ain even deh nowhere yet…[106]

8.5. Conclusion

The case of Kangaruma further highlights the limitations of the technocratic approach to green mining in recognizing and responding to subtle and complex questions of politics, culture, and ecology. As with Maicobie, whether the mining activity within the proposed title is adhering perfectly to the state's regulations or not, for the village, the fact that mining activity is taking place at all within its proposed title represents an illegitimate encroachment on what it sees as its ancestral land. On a practical level, these activities are severely limiting the villages' current and future livelihood and land use planning efforts.

While the state is failing to protect those who do not want to mine, it is also meanwhile failing to match its impressive rhetoric on Amerindians rights and knowledge with concrete actions to enable communities such as Kangaruma-Tasserene to explore their own 'green' development pathway. Because they lack the legal framework that a title would give, they are also unable to participate in so-called 'green' initiatives such as REDD+ or FCPF. Development interventions that do take place continue to focus on 'alternative' livelihoods, ignoring both the obstacles to livelihood planning that the villages face as a result of lacking a title and the economic lure of mining for villagers.

Overall, the case once again shows how a political ecology lens can enable a broader critique of ASM reform that goes beyond the consideration of land as a techno-institutional space to be demarcated and administered. Rather, it recognizes the range of complex political and ecological phenomena – and the range of stories, counter-narratives, and normative concerns – that swirl around, within, and beneath the order of the mineral gridlines. These phenomena relate not only to under-acknowledged questions of social justice, but also to complex interactions between politics, institutions, and dynamic ecologies.

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[106] Interview in Stabroek News (2015c).

Chapter 9: Discussion: the politics of green mining

9.1. Introduction

This chapter will bring together the theoretical and empirical material explored thus far to establish where this thesis's approach and findings have made contributions to building a better understanding of the dynamics of ASM and ASM reform, thus answering research sub-question four. The first, and longest, part of the chapter will be structured around the three different components of the reform storyline that ally broadly with the three overlapping but distinctly-focused bodies of literature summarized in Chapter 2 as the 'post-structural' (concerning the politics of environmental policy knowledge), the 'structural' (concerning the inclusion and legitimacy of ASM institutions), and the 'pragmatic' (concerning the limitations of formal rules and institutions in securing the desired outcomes) critiques. While clarifying where the Guyanese articulation of the mainstream storyline identified in Chapter 5 was disrupted by the reality of reform as observed and experienced on the ground across the cases in Chapters 6, 7, and 8, the sections will discuss the ways in which the findings variously challenge – or support – the specific theoretical arguments about formalization that were explored in Chapter 2.

In answering this thesis's over-arching research question, the chapter will then explain how the political ecology approach has been effective in offering a broader critique of ASM reform than the individual critiques discussed in Chapter 2 accomplish alone. It will explain how the characterization of environmentally-oriented reform agendas as 'storylines' – that embody institutions, practices, but also assumptions and constructions – has highlighted the fact that reforms are not disinterested technical undertakings, but are contingent and contested agendas and are rooted in power, knowledge, and politics. In recognizing and engaging with a range of normative concerns – such as policy effectiveness, epistemological legibility, and social justice – the political ecology approach can potentially contribute to more inclusive, effective, and appropriate policies.

9.2. The politics of environmental knowledge

The first component of the storyline that was identified in Chapter 2 rationalizes intervention in the sector based on the idea that ASM activity creates negative environmental and social impacts, and that it is primarily the unregulated or illegal nature

of this activity that is contributing to these impacts. As was set out in Chapter 5, this storyline has translated itself to the Guyanese setting in state-led attempts to reign in degradation by targeting illegal miners with harsher punishments amidst an enforcement drive, while instituting stricter regulations for those mining legally. Indigenous communities, who are framed as 'natural conservationists' and the principle human victims of gold mining's negativities, have meanwhile been targeted with non-mining development projects and with promises that their tenure will be guaranteed so that they can potentially exploit REDD+ and FCPF funding.

Contestation at the national level that was observed in Chapter 5 – over the motivations for reform, the mainstream representations of the 'problems' of small-scale mining, and the proportionality and nature of the responses – was seen to foreshadow contestation that was further refracted in a diversity of local contexts, as was seen in the three case studies in Chapters 6, 7, and 8. Overall, this contestation exemplifies the kinds of clashes between different actors and interests over environmental policy framings that political ecology has long acknowledged (Robbins 2000; Keeley & Scoones 2003; Forsyth 2004). It also reflects many of the concerns of the post-structural critiques outlined in Chapter 2 that advocate more nuanced readings of ASM dynamics based on place-based research. The existence and scale of this contestation – often overlooked in policy approaches – arguably destabilizes the 'taken for granted' nature of knowledge about the mining-environment relationship that underwrites the mainstream policy approach and its local articulations in Guyana and elsewhere. The range of discursive contestation summarized in this section reflects the issues that policy makers would need to address if policy programmes are going to be more effective.

9.2.1. Contested agendas

Even before the debates around mining impacts are considered, it is important to acknowledge the level of mistrust that defines perceptions of the mining reform agenda in Guyana. While powerful miners associated with the GGDMA saw the initial REDD+-related mining reform drive merely as threatening rhetoric that would not ultimately be translated into prohibitive measures, attempts to reform the sector that followed the 2015 election have been seen in a more serious light. Miners have increasingly framed these reforms as being driven by ulterior government motives to phase out the difficult-to-

regulate smaller producers in favour of larger foreign companies, where the perceived financial pay-offs for high-level state actors are higher and the regulatory burden is lower (Kaieteur News, 2017e). For many miners, the increasingly prohibitive environment for smaller operators exposes a new top-down approach to the sector that is at odds with both the APNU government's rhetorical commitments to the protection of the 'small man' and the 'sustainable' development spirit of the LCDS and Green State strategies that is supposed to balance environmental with economic concerns.

While miners' protests have clearly been motivated by economic self-preservation, they have also been effectively connected to wider moral arguments about the externally-driven nature of 'green' policies (Hirons 2011a). The role of Norway in seemingly trying to prevent Guyana from being able to exploit its own resources – while also refusing to engage with or fund *any* activities aimed at attempting to minimize the ecological footprint of mining – was highlighted by many miners as hypocritical in the context of Norway's role as a major oil exporter. Such a dynamic appears to exemplify what some argue are the global injustices and inequalities upon which many 'green' initiatives are based (Cavanagh & Benjaminsen 2017). Reflecting the schism within the sector and the growing scepticism about the GGDMA's own agenda, however, many small miners have recently begun to accept regularization measures, provided other grievances, such as land access, are addressed – as has been seen with the syndicate development.

9.2.2. Contested effects

The absence of studies on the environmental risks of mining contributes to an overall 'politics of invisibility' whereby risks can only be guessed about or argued over based on speculation and anecdotes rather than any scientific consensus (Fischer 2000). As Hilson and Maponga (2004) and Heemskerk (2005) have observed, such a lack of independent studies on the mining-environment relationship is a particular problem in the ASM world. The purported 'neutrality' of the scientific information rationalizing reform is often received with a mistrust among miners, and environmental measures are dismissed for being promoted by outsiders who have little understanding of the context (Peet et al. 2010). Even where degradation from mining is empirically observable in Guyana, the seriousness of the ecological impacts is variously and locally disputed in the absence of a scientific consensus.

Although, as IADB (2015) has recognized, the level of knowledge of environmental issues varies widely between the Georgetown-based GGDMA and the average miner, the consonance between the national level counter-discourses – propagated mainly by the GGDMA – and the local perceptions among miners arguably illustrates the effectiveness of the GGDMA in galvanizing support around its preferred 'storyline' (Hajer & Versteeg 2005). Perceptions at the local level do exhibit some differentiation, however, with much of it informed by years of direct experience of environmental change. Perceptions of urgency and seriousness are after all strongly shaped by the geographically- and socially-situated experiences of these impacts, which sometimes run counter to both mainstream and populist narratives (Leach & Mearns 1996). The perception of the importance of ecological issues is particularly heightened, for example, in permanent indigenous communities – as was seen in Maicobie – due to their proximity to mining activity. A brief surveying of the range of views expressed about the main environmental issues illustrates the lack of consensus about a range of impacts.

9.2.2.1. Forests

While the mineral maps suggest a dramatic encroachment of mining activity on forests, national parks, and indigenous villages – and while populist, anti-mining discourses have leaned heavily on these and other dramatic images to assert the 'seriousness' of the threat – there is no real consensus across the hinterland on the mining-deforestation relationship. Many miners regard the mining-deforestation link to be a misnomer whose importance has been vastly overstated and which pales into insignificance with other forms of land use such as mechanized agriculture or indigenous forms of 'slash and burn' farming. Miners often cited Guyana's low overall deforestation rate and the minimal threat of future loss (as a result of the difficultly of accessing new frontiers) as reasons to downplay the significance of the issue. Similarly, miners universally cited direct observations of re-vegetation on former mine sites as evidence that 'nature repairs itself'. The GGDMA has added an academic veneer to its problematization of the focus on deforestation by citing an 'alternative' FAO (2010) definition of forest loss from mining that frames it as a 'temporary disturbance' rather than a 'permanent loss'. In this sense, they have implicitly drawn on post-structural-inspired scholarship that has problematized dominant and universalizing representations of global problems (Adger et al. 2001). While mining critics in Guyana naturally dismiss these arguments, research elsewhere has supported

some of these claims about the self-repairing nature of forests (Peterson & Heemskerk 2001; Hirons et al. 2014).

9.2.2.2. Mercury

While Guyana is faced with a threatened ban on mercury, the case studies illustrated that usage is still widespread and minimal precautions are generally taken to protect human health. Ecological impacts are meanwhile viewed philosophically, with a general perception that mercury vapours, because they are invisible, 'disappear' into the atmosphere. Alternative recovery methods can meanwhile be readily dismissed as they are too expensive to contemplate (Veiga et al. 2014). The situation in Guyana is thus similar to that in Suriname, where mercury is still by far the most affordable recovery method, representing only 1-2% of miners' total costs (Heemskerk 2001b). Crucially, because the dangers appear to be an externally-driven narrative, miners appeared resistant to change, and proudly emphasized the importance of mercury within the pork knocker culture (Veiga et al. 2014).

The state's delays in committing to the introduction of a mercury ban – pushing it back from 2015, to 2020, and then to 2029 – appear to have galvanised the view that the ban is not a likely or necessary prospect. Indeed, apart from a few isolated pilot projects, the government has done little to support a push towards a mercury-free sector beyond repeating that it must be eventually realised. Recently, the GGDMA, having initially agreed to cooperate with the state phase-out programme, once again dismissed the notion, referring to the mercury ban as "fool's gold" (Kaieteur News 2017e).

9.2.2.3. Rivers and river banks

The most recent environmental issue to receive media attention is that of damage to rivers and river banks (GHRA 2017). As with forest loss, both miners and GGMC officers dispute the permanence of river pollution, citing examples of creeks and rivers that 'run clear' after several years of mining activity ceasing in that area. These interpretations are little consolation for permanent communities whose livelihoods have already been severely disrupted – as was seen in Maicobie and Kangaruma-Tasserene.

9.2.3. Contested causes

As well as contestation over the motivation for reform and the actual impacts of mining activity, there is also dispute around who – or what – is responsible for mining impacts. According to the Guyanese articulation of the narrative, negative impacts are synonymous with both illegal mining and poorly-practised legal mining being carried out by under-capitalized and errant smaller, non-indigenous miners. For policy framers, this therefore justifies the militarized enforcement approach targeting 'illegal' mining and a regulatory approach aiming to enforce a stricter version of legal mining. However, across the case studies, these assumptions and representations were variously challenged. In many cases the perceived mis-diagnosis of the 'problem' was a source of resentment among constituencies who felt as if the wrong people were being targeted, and the real perpetrators were being overlooked.

9.2.3.1. Small/large

Many smaller miners, for example, considered larger miners to be escaping censure within the current reform approach. They attributed this to the perpetuation of the myth that larger-scale mining practices are more 'green' than those used in the ASM sector, when in reality all miners essentially use the same methods. Many asserted that, if larger miners are less likely to be officially found guilty of environmental transgressions, this is because they are more financially capable of paying off the regulator if found guilty of breaking rules.

9.2.3.2. Miner/Amerindian

The dissonance between public framings of indigenous participation in mining and observed realities has similarly fuelled resentment among non-indigenous miners who feel as if Amerindians are manipulating public perceptions and being unfairly privileged, even while they are equally responsible for mining impacts. This appears to confirm what others have observed about the tendency to romanticize and victimize indigenous peoples in mining-related debates (Lahiri-Dutt 2017). While indigenous communities *do* appear to have to live with some of the worst impacts of mining due to their proximity to such activity, the studies found that indigenous peoples are also willing participants in much of this mechanized mining activity, both through migratory labour on State lands and through mining within their titled and untitled communities.

Many of the indigenous villagers interviewed across the case studies privately saw mining as the only viable livelihood that would enable them to sustain elements of their forest-dwelling culture, an attitude that supports Killick's (2018) contention that Amerindian livelihood modalities are now, as ever, inevitably hybrid. It was shown nonetheless how villagers appeared to feel as if it was in their political interest to perpetuate the simplistic victimizing narrative in order to continue securing international support and sympathy while preserving the moral consistency of their land claims. Many policy professionals in Guyana believe that the predication of interventions targeting Amerindians on these false narratives may actually be worsening environmental conditions in the interior. Indeed, there is some evidence that poorly-conceived 'livelihood' projects based on ideas of what Amerindians *should be doing* tend to lack buy-in or support as they do not address actually-existing livelihood needs, which centre on mining. Such programmes thus importantly miss an opportunity to provide targeted educational and technical assistance for indigenous miners in order to help them pursue the state's definition of 'green' or 'responsible' mining. The findings suggest that more on-the-ground academic research is needed to understand better the dynamics of mining in indigenous villages. Indeed, as Hennessy (2015, p. 145) states: "If the dual charge is to assess whether and how mining should be sustainable, and what directions future work should follow, then research must continue… An indigenous community mining its own land is a good place to start."

9.2.3.3. Legal/illegal

The findings from this thesis offer some interesting insights into formality and its relationship with responsible mining. The case studies illustrated that ASM mining activity is forever veering into 'informality' or 'illegality' in Guyana – as defined by the rules and regulations – in spite of the well-developed formal framework. This confirms findings about informality and ASM from numerous other studies (Nyame & Blocher 2010; Van Bockstael 2014; Verbrugge 2015a). The fact that much of this informal activity occurs within cooperative arrangements and is not necessarily destructive, however, appears to problematize the idea that those practising illegal mining should automatically be criminalized (Ofori & Ofori 2018). Indeed, the evidence indicates that strict informality (or, 'illegality') is not *always* synonymous with 'bad' mining, and that many of the most decried forms of degradation are taking place within nominally legal frameworks. This blurredness suggests that the priority for policy makers and regulators should be to pragmatically accept that having total control over all activity is impossible

given the dynamism of ASM environments, and that they should focus instead on the function of the institutional arrangement governing the mining activity, rather than its form (Cleaver 2017; Ho 2018).

9.2.3.3.1. Illegal/informal is not always 'bad' mining

For example, the informality arising in Guyana's mining landscape that was captured by the case studies often appeared as an expression of the sector's hidden demands for flexibility. Indeed, ever since the skeins of British colonial ordinances proliferated beyond the ability or inclination of miners or regulators to sustain, such 'an informality of necessity and default' has arguably become the norm in Guyana (Lowe 2003).

These drifts towards informality appear to confirm characterizations of mining that were introduced in Chapter 2, where low levels of literacy and the remoteness of the activity lead to pervasive 'off-the-books' transactions; where logistical monitoring problems and poverty encourage corrupt deals; where complex tenure arrangements and local politics lead to discretionary or hybrid forms of authority and governance; and where the high stakes – and ultimate uncertainty – about gold create an atmosphere dominated by suspicion and 'secret' knowledge (Geenen 2018; Peluso 2018).

Indeed, reflecting the tendency in ASM landscapes for authority and governance to be constantly being re-shaped and re-made, many of the current modalities in Guyana appear to have evolved from previously-illegal practices. For example, the tributor-landlord system that was explored in detail in Chapters 6 and that now governs as much as three-quarters of mining activity, was at one time illegal and insecure, and was only regularized in the 2000s. Similarly, the longstanding practice of making agreements between indigenous villages and miners is also technically illegal but has been allowed to persist because it is seen as a locally-responsive governance arrangement.

While such forms of technically 'illegal' mining are often overlooked by officials in return for a bribe, laxity in enforcement is not always so self-motivated. Indeed, as was acknowledged, officials are also known for showing leniency or compassion towards miners who may just have an out-of-date licence or a missing document. Such clemency is often tied to personal relationships that develop in the interior but is also related to the fact that Mines Officers can be vulnerable and isolated and are therefore reluctant to be

drawn into conflict. These examples nonetheless illustrate that just because mining is illegal, it does not necessarily make it 'bad' for the environment – even as it may be reducing state revenue.

9.2.3.3.2. Legal/formal mining is not always 'good' mining

Conversely, many of the negative impacts from mining today across the cases are arguably being caused by nominally 'legal' mining activity. This may either take the form of infringements that are being enabled and legitimized by corrupt officials (and thus are bureaucratically 'invisible'), or technically legal activity whose very moral basis is nonetheless considered by some to exemplify the inadequacy of the legal norms. In the case of the former, many argue that miners are routinely allowed to circumvent rules through bribery, often generating negative impacts. In the case of the latter, it was seen that 'legal' mining, particularly in indigenous communities, is often legitimized by the state through the contested 'save and except' clause, even as it detriments the livelihoods and lifestyles of communities and is considered to be morally or ethically illegitimate by indigenous rights advocates (MacInnes et al. 2018).

9.2.4. The ontology of 'green' mining

While there are contestations over many aspects of the reform narrative, there are also wider concerns about the overall ontology of mining and mining reform that challenge more fundamentally the agenda's 'win-win' narrative. Some Amerindian advocates argue that *any* kind of mining is inherently incongruous with a national 'Green' Development strategy, and question how an agenda could be considered 'successful' in spite of both failing to prevent significant ecological degradation and failing to protect its citizens from the impacts of mining activity (Interview 24). Others argue that a form of 'green' mining that is predicated on the ignoring of 'customary' rights and forms of environmental abuse (that are enabled by corrupt officials or permissive fines and fees) should be considered as inherently flawed (Dooley & Griffiths 2014). Villagers point out that there is inherent hypocrisy in consistently invoking 'traditional' knowledge and practices, while both failing to protect Amerindian rights or direct significant resources their way.

The cases in Chapters 7 and 8 showed how institutional idiosyncrasies are legitimizing the continuation of mining within village titles, undermining communities' ability to control their development pathways, while also impinging – through the generation of

noise, effluent, tailings, mercury, etc. – on the 'quiet enjoyment' of their lives. What is interesting to note, however, is the disjuncture between the national-level narratives promoted by Amerindian organizations and the actual wishes and perceptions of various villages. For example, while the majority of the Kangaruma community (and the older members in particular) appeared to have adopted the extreme anti-mining position of the APA and appeared to be looking to the state to guarantee them the tenure security that would enable them to manage the socio-economic, ecological, and cultural pressures of gold mining, other villages, such as Maicobie, have not only got deeply into mining themselves, but are furthermore interested in receiving the kinds of technical assistance and advice that would enable them to mine *better*.

9.3. Inclusion, exclusion, and the legitimacy of formal institutions

Having already partly destabilized the rationalization for formalization-centred mining reform in Guyana from a number of different angles by drawing attention to the contestation and uncertainty that surrounds the true nature of the mining-environment relationship across different sites, this section will explain how the findings problematize the second part of the storyline: the idea that installing, introducing, and enforcing formal institutions is a purely technical or *frictionless* undertaking. On the contrary, the increasingly challenging structural conditions and the existence of unresolved and underlying contentiousness between indigenous groups, poorer miners, and the state over the structural basis of formal titles, clearly challenges the technocratic policy ideal.

The recognition of these phenomena within Guyana's formal mining landscape offers an opportunity to appraise a wide range of scholarly critiques of ASM formalization – on inclusion, exclusion, and institutional legitimacy. The initial inclusiveness of Guyana's formal institutions – and the persistent appetite among miners today for formal properties as a bulwark against tenure insecurity – appears to support advocates of formal property rights. However, the existence of a range of additional phenomena challenges the idea that gains from formalization are universal or permanent. Indeed, experiences of various forms of exclusion and perceptions of illegitimacy and unfairness around the structural basis of formal titles appear to support several salient warnings about – and provide new perspectives on – how formal institutions play out in practice.

9.3.1. Inclusion

The examination of the evolution of Guyana's mining institutions in Chapter 4 highlighted how they had been deliberately crafted to encourage inclusion among Guyanese citizens. As several scholars have noted, unlike in many other countries, Guyana's miners have not traditionally been excluded from accessing a mining claim as a result of their unaffordability (Bulkan & Palmer 2016; Hilson & Maconachie 2017). Further, despite the proliferation of highly bureaucratic rules over the years, the relatively inclusive nature of the regulatory environment in Guyana also shows how a pro-poor ASM system can potentially emerge.

The historical accessibility of the mining sector for poorer actors is believed to have contributed to stability, high declarations, and a significant source of tax revenue and royalties, and the erstwhile success of this institutional framework appears to support the conventional arguments made in favour of formalization that were looked at in Chapter 2. The historically large contribution to national declarations from smaller operators (still as high as three-quarters of total output) is a source of pride and patriotism. The appetite among miners in Guyana today for formal titles amidst growing land insecurity meanwhile appears to partly support de Soto's (2000) thesis about how formal property titles can offer welcome tenure security (Siegel & Veiga 2009). The recent emergence of the syndicate route underlines however that titles need not necessarily be individualized, as de Soto himself acknowledges (ibid.).

Despite the sector's celebrated accessibility, however, it should be stressed that the pervasiveness of lax enforcement over the years may have masked the actual economic unsustainability of the small-scale operations themselves, with miners being allowed to remain in the sector even though they were not able to strictly adhere to required rules and regulations. Indeed, as one official remarked in Guyana, if the letter of the law was to be followed, probably "95% of operations would be closed down" (Interview 87). From this perspective, it could be argued that the normalization of corrupt practices has essentially underwritten the economic sustainability of the small-scale sector by enabling operators who would otherwise be unable to meet regulatory requirements to remain in the sector. Thus, the ability of miners to evade rules and regulations by engaging in (more

affordable) corruption may have paradoxically forestalled the 'creation' of greater informality than has otherwise been seen (Hilson & Maconachie 2017).

9.3.2. Free market exclusion, resource governmentalities, and class power

While the accessibility of poorer miners to the sector has been historically facilitated by affordable rental fees and a permissive regulatory environment, the rapid increase in land competition and land concentration over the past ten years that was documented in Chapter 4 has precipitated a situation where many miners have now become effectively excluded from the official sector. While rentals have remained at the same price – still around US$5 a year for a claim – the only remaining available lands to rent through the state are: remote blocks and claims that are unrealistic prospects for under-capitalized smaller miners; lotteries (which typically yield only barren land); auctions (which smaller miners are priced out of); and syndicate land. This exclusion of smaller miners appears quite contrary to the spirit of the 1989 Mining Act, which was crafted to facilitate land access for all Guyanese, and arguably supports accusations that Guyana has back-slid on its commitments to small miners (Bulkan & Palmer 2016).

On the surface, the scenario appears to mirror the creation of an artificial land shortage that Spiegel (2016) highlights in Cambodia. However, unlike that case, where the root of exclusion was the bequeathing of lands to large mining companies, the novel and unexpected instrument of exclusion in this case appears to be a combination of generous regulatory conditions and the market itself. Indeed, appearing to confirm Clausen et al.'s (2011) warnings about the consequences of unrestricted property accumulation, as was seen in Chapter 6, land concentration in Guyana has led to the effective creation of a parallel system of land governance, according to which landlords, facilitated by the state's lax attitude to inequality, now control the terms of mineral access and the conditions of operation for the landless class of miners and dredge owners. Although debates around the exact terms of these arrangements are the source of much disagreement, they have allegedly tended towards insecurity and exploitation. Despite having an awareness of these dynamics, policy makers in Guyana appear reluctant to intervene in this distribution of properties, preferring to defer to the wisdom of the market.

As well as being an expression of class dominance and an articulation of capital interests in a relatively advanced socio-technical ASM context, however, it is important to appreciate the extent to which the inertia behind small miners' vulnerability is also deeply socio-ecological, related strongly to the uncertainty that surrounds gold's location (Geenen 2018; Lanzano 2018). Indeed, in the absence of knowledge about deposits, it is in landlords' economic interest for there to be a large army of landless miners who they can continue to exploit as cheap, desperate, prospectors who will help them to find the gold on their land. Landlords' resistance to the syndicate policy can therefore be seen in the context of resistance to any measure that potentially threatens to reduce the size of this group of vulnerable, landless miners. The case thus underlines the extent to which *both* the ability to control access to land *and* the ability to obtain and protect knowledge about gold deposits are helping landowners to secure their position of dominance (Geenen 2018; Pelsuo 2018). While class formation and articulation within ASM sectors has been analysed elsewhere on regional or sub-national scales, Guyana's small population and comprehensively-formalized mining system illustrates how an elite has been able to exert a far more comprehensive level of class control (c.f. Verbrugge 2015b). The extensive availability and accessibility of mining property data moreover enabled a dramatic GIS presentation of the extent of this control in Chapter 4. Overall, these findings offer new political-ecological perspectives on the organization and role of capital and class interests in shaping accumulation and exclusion in ASM sectors, building on work by Peluso (2017, 2018) and Verbrugge et al. (2015).

With respect to contributing to research into what Peluso (2018, p. 2) terms the "resource governmentalities" of ASM, this case further illustrates how, even within a comprehensively formalized institutional framework, class interests are perpetually trying to re-shape authority in their own interest (Côte & Korf 2018). For example, the formalization and institutionalization of the 'percentage' system in Guyana by the state, through a series of regulations, has arguably entrenched a mal-distribution of land and an accompanying system of exploitation that disadvantages landless miners and benefits landlords. The emergence of the government's syndicate policy in response to activism by small miners does however illustrate political ecology's 'dialectical' understanding of social struggle: just as new forms of exclusion may emerge, new forms of inclusion may once again be fought for and achieved (Peet et al. 2010).

9.3.3. The undoing of accessibility

Against a backdrop of international environmental obligations and agreements, the state has been introducing an increasing number of regulatory requirements and technical obligations for smaller miners. These requirements have principally aimed to define a stricter definition of 'responsible' mining – the adherence to which theoretically aligns gold mining activities with global environmental norms. Since 2015, regulations have increasingly focused on revenue-collection and broader regularization aims, driven by the commitments of the incoming APNU government to stamp out discretionary economic activity (Demerara Waves 2016). As the rationale for this increased strictness appears largely animated by environmental discourses and objectives, it could be argued that this exclusion of small operators is an example of the kind of "green squeeze" – to use Bersaglio & Cleaver's (2018, p. 275) term – that Hirons' (2011a) drew attention to in Ghana (where REDD+ policies were allegedly 'locking' miners out of the landscape).

At the same time that regulatory requirements have been heightened, there have been attempts by the state and NGOs to promote and introduce technological programmes and initiatives aimed at preparing small-scale miners for the new modality of mining – one that is essentially modelled on large-scale operations (Hinton et al. 2003). However, reflecting the tacit acknowledgement that these technologies are ultimately unrealistic for smaller miners, it is telling that a 2017 Conservation International and GEF project[107] was being piloted, not with smaller-scale miners, but on an effectively 'large-scale' mine (owned by a former GGMC Commissioner) that was allegedly extracting hundreds of ounces of gold per month (Interview 18). This mine also happened to be the site of one of the GMSTI's training programmes.

Such developments appear to mirror patterns of exclusion in natural resource sectors observed elsewhere that have similarly been driven by so-called 'green' rationalities' (Fairhead et al. 2012; Brockington & Ponte 2015). With respect to ASM reforms, they

[107] The 'Global Opportunities for Long-term Development of the ASGM Sector – GEF Gold Program' aims to facilitate the "conversion to mercury-free mining by 2025 by directly involving business enterprises with a profit motive for leading the shift in the development of a mercury free ASGM supply chain and downstream El Dorado brand jewellery."

appear analogous of the situation in Zimbabwe observed by Spiegel (2012a), where a progressive approach to ASM in the 1990s gave way to a more repressive approach in the 2000s. In Guyana's case, the rapid expansion in new rules and fees, especially since 2015, suggests that the country is backsliding on its erstwhile inclusive approach to its small-scale sector (Hilson & Maconachie 2017; Hilson & Laing 2017b). Although fees in Guyana are still low compared with other countries, the introduction of new taxes and regulatory requirements are making the sector increasingly inaccessible for smaller operators, raising the attractiveness of turning to illegal mining, and appearing to support the 'legalist' thesis about how higher barriers to sector entry can drive illegal or informal mining (Banchirigah 2008; Hilson et al. 2017). However, overall, as the Potaro case study in Chapter 6 illustrated, these new obligations cannot be considered as purely to blame for exclusion but must be seen in the context of the broader challenges of reproduction that small miners face in Guyana amidst exploitative structural relationships with landowners, growing competition for minerals, and declining state support.

9.3.4. Extra-social exclusion

Although small miners' claims of being squeezed out of the sector by both landlordism and burdensome regulations were pervasive, other industry observers regarded smaller miners' reproduction challenges as having as much to do with the increasing non-viability of their socio-technical systems and levels of capitalization for recovering deeper minerals (Malpeli & Chirico 2013; Spiegel 2014). Thus, they saw the marginalization and exclusion of smaller producers as an inevitable outcome of secular socio-ecological trends, rather than being the result of *purely* political-economic relationships. Such observations have been made in the technical literature on ASM in Guyana (Wotruba et al. 1998; IADB 2015, 2017), but are yet to be thoroughly examined in the academic literature on Guyana (as in Bakia's (2014) discussion of the issue in Cameroon and Hilson's (2010) discussion of the issue among diamond miners in Ghana).

The idea that alluvial deposits in Guyana are almost exhausted and that, in some sense, the ecological challenges the regulator is currently facing will soon disappear as the industry moves more towards hard-rock mining, is one that is widely shared by many senior government actors in Guyana. From this perspective, syndicates, which are viewed more as a political concession than a viable economic solution to alleged land shortages, are dismissed as failing to address this wider socio-ecological conundrum. Nonetheless,

in the short-term, social and the ecological dimensions do still seem to be intertwined in a relationship uniquely visible to a political ecology analysis (Bridge 2004). For example, poorer miners' ability to obtain the very land on which they would potentially be able to access shallow gold deposits is clearly constrained by the fact that such lands have already been 'locked up' by landowners (Spiegel 2016).

9.3.5. Indigenous counter-claims and legal bias

Moving away from 'State lands', Chapters 7 and 8 highlighted how the legitimacy of the structural basis of tenure upon which 'green' mining is predicated in Guyana is itself strongly contested by Amerindian communities. For many communities, the mining taking place – whether 'green' or 'responsible' or not according to state definitions – simply should not be taking place at all. Indeed, its very existence overrides their land claims and entrenches the colonially-inherited biases that favour mining over indigenous interests and rights (Bulkan 2016). As well as the fact that communities such as Kangaruma-Tasserene and Maicobie feel as if their land claims have been ignored or overridden, they also feel that the construction of laws and regulations (such as the 'save and except' clause) specifically denies them from either accessing the benefits from – or protecting themselves from the impacts of – mining activity. The issues are thus both questions of ethical principles and material impact.

On the surface, such scenarios appear to echo many criticisms about both the historic privileging of mining interests over indigenous rights and the ways in which economistic discourses about natural resources crowd out alternative uses, meanings, and experiences of land (Huggins 2016; Mitchell 2016). However, as was explored, the grievance narratives are, for some, complicated (or undermined) by the contemporary indigenous desire to mine on their land, rather than to preserve it for 'traditional' use (Lahiri-Dutt 2017). Resolving disputes around the 'prior occupation' of land is meanwhile complicated by the fact that claims are assessed in terms of modernist discourses about the continuous occupation of spatially-fixed land parcels, which appear irreconcilable with the dynamic and fluid realities of the socio-cultural livelihoods and lifestyles of actual Amerindian tribes (Hennessy 2013).

9.4. The limitations of formal institutions

Having problematized the rationalizations for environmentally-oriented formalization policies and the assumptions about the frictionless installation of formal institutions – thus engaging with post-structural and structural critiques – this section will engage with the more pragmatic critiques that concern the *purpose* and *effectiveness* of formal institutions for addressing the 'problems' identified. Typically, the policy literature argues that the effectiveness of institutions is simply a question of design and numbers: of the coverage of formal properties; of the amount of enforcement officers who can prevent 'leakage'; of the scale of and access to technology and finance for smaller miners; and of the calibration of fees and fines that will incentivize 'responsible' – and deter 'irresponsible' – behaviour. While not disputing the relevance of such factors altogether, this section will nonetheless argue that the findings show that such technical dimensions must be recognized as inherently entangled in the political ecologies of knowledge and place. In Guyana, a range of intervening material and discursive factors appear to be mediating the 'effectiveness' of the formal institutions and rules in preventing degradation and other negativities. Such findings support the notion that so-called 'academic' work that is focused on highlighting normative concerns unrelated to 'efficiency' or 'effectiveness' can nonetheless still inform policy debates focused on policy effectiveness, thus supporting the case for academic-policy engagement.

9.4.1. Legibility and legitimacy

As well as being an epistemological and political concern in its own right, the perceived illegibility and insensitivity of the reform approach that was explored in the first and second sections of this chapter may also be undermining the willingness among miners to 'buy into' the state's policy agenda, ultimately worsening the ecological impacts of mining. This reflects the ways in which discursive dimensions may interact with material practices to condition environmental outcomes (Scoones 1999; Keeley & Scoones 2003). Such a dynamic can be observed in the way that miners are reluctant to look seriously at mercury alternatives as a result of prior negative experiences with technologies such as retorts, which many miners find inappropriate and inefficient for their purposes (Veiga & Hinton 2002; Veiga et al. 2014). The reluctance to abandon mercury can also be understood in terms of poorer miners' cultural attachment to its use, as many see it as 'their method' of choice.

The resurgence of raiding and the proliferation of illegal practices must also be understood in the light of miners' perceptions of the unfair distribution of land and the unilateral introduction of prohibitive new rules and taxes. In this sense, for the landless miners, the unfairness and favouritism justifies their transgressions. This provides an empirical illustration in support of Ostrom and Janssen's (2005) and Clausen et al.'s (2011) contentions that participants' willingness to respect formal institutions is strongly related to the institutions' perceived legitimacy.

The ongoing break-down in cooperation between miners and the state in Guyana that is rooted in perceptions of injustice and illegitimacy arguably risks more serious long-term social and environmental consequences, as has been seen in other contexts, such as neighbouring Brazil. In that case, a similar level of formalization was rendered irrelevant when a break-down in dialogue following what was perceived as an unreasonably severe enforcement drive had the paradoxical effect of pushing mining activity underground (Sousa et al. 2011). Similar dynamics were seen in French Guiana where a strict mercury ban was enacted with no prior warning or support, leading to a dramatic increase in wholesale regulatory evasion by miners (Veiga et al. 2014).

9.4.2. Stress and insecurity

While the orthodox view is that poor mining practices are a question of poor education, an inveterately poor attitude, and a lack of finance, the findings here suggested that structural conditions may also play a major role in shaping the decisions among ASM operators that lead to ecological degradation. These insights bring together classic concerns of political ecology: the role of class in mediating operating conditions for poorer resource users and the significance of poverty as a driver of degradation in natural resource sectors (Peet et al. 2010).

As well as the allegations that exorbitant rental contracts with landlords are hindering miners' adherence to costly regulations, small miners also claimed that their anxieties over tenure insecurity are driving them to mine haphazardly and to ignore safety and ecological concerns. This insecurity and uncertainty over the tenure period also undermines their willingness or ability to develop 'long-term' mine plans. In a paradoxical cycle that is fuelling mistrust, conflict, and violence in a sector that is already riven with such dynamics, such fears are leading tenant miners to withhold information

about how much gold they are extracting from their landlords and from the regulator, appearing to confirm landlords' worst suspicions about smaller miners' dishonesty (Heemskerk et al. 2015). Such instances were frequently used by landlords to justify subsequent ill-treatment of small miners.

Despite the near-ubiquity of such stories in the mining areas, however, these dynamics are not universally accepted, with larger miners perhaps predictably unprepared to accept the argument that structural conditions are a valid 'excuse' that justifies ecological degradation. Indeed, many larger miners typically suggested that small miners would seek to evade rules anyway, echoing common conservative narratives about small miners' incorrigibly errant natures (Tschakert & Singha 2007).

The issue of landlordism is so politically sensitive that few in the policy or donor community are willing to address the issue publicly, even as it will arguably be a significant determinant of project success (Interview 18). After all, what cannot be ignored is the fact that the operating costs for smaller miners within formal contracts are higher than what they would be if they could have accessed land directly from the state. Further, the preferred 'state route' also gives miners a guaranteed, fixed-term contract period and a semblance of tenure security. Overall, these findings then partly support Ribot and Peluso's (2003, p. 165) argument that a realm of factors beyond the purely technical – such as "technology, capital, markets, knowledge, authority, social identities and social relations" – can shape natural resource users' ability to thrive, even where legal rights have been secured.

9.4.3. Institutional frailty

While formal institutions are considered essential in managing the ecological impacts of mining, the thesis found that there are serious questions about whether the institutions currently in place in Guyana fulfil this role. Indeed, for some, the fines punishing environmental and other abuses (only around US$500, or 10 pennyweights (dwt)) of gold for the loss of a bond) were grossly inadequate, paling into insignificance against gold mining profits. In reality, despite the threat of fines, dredge owners happily 'mash up' the land and pay the fine because it is cost-effective for them to do so. Some Brazilian miners interviewed even admitted that they came to Guyana because the lax regulations enabled

them to practise mining in a destructive (and profitable) way that would be illegal in their own country (Interview 128). On this point, it is also important to stress the importance of policy changes in other countries on environmental 'leakages' in others. For example, when Brazil instituted a crack-down on small-scale mining in the 1990s, it led to an influx of illegal miners (and new governance challenges) into Guyana. Similarly, Dezecache et al. (2017) predict that a draconian crack-down underway in French Guiana may have the same effect of increasing the number of illegal miners moving into Guyana, potentially threatening further environmental 'leakages'.

As well as institutions being incorrectly calibrated, there was also significant suggestion that state environmental mining policy had been 'captured' by industry actors, to the detriment of environmental conditions. Chapter 5, for example, illustrated how the GGDMA was persistently successful in staving off serious environmental reforms – particularly under the PPP/C government – that threatened both the gold mining sector's economic sustainability and the personal fortunes of favoured industry actors. Media reports and speculation on the ground about high-level complicity between state actors, gold smugglers, and landlords meanwhile appeared to support Peluso's (2018) characterization of a 'shadow state' within gold mining economies that often operates independently of the official system.

At the ground-level, pervasive institutional frailties were found to be further enabling ecological degradation. These routinized practices – whereby corrupt officials overlook transgressions in exchange for an ounce of gold (or more) – are widespread in Guyana and may be seriously undermining the function and integrity of the formal system. This underlines that formal rules and regularization may be meaningless without accompanying enforcement (Crawford & Botchwey 2017). While a previous section illustrated that instances of 'informality' or 'illegality' are sometimes expressions of flexibility, these forms should arguably be considered as blatant illegalities that are enabling degradation and undermining both institutional form *and* function. From an institutional perspective, bribes to officers (which are more affordable for miners than the costs of adhering to expensive regulatory requirements) must moreover be seen as a form of environmental rent that have underwritten degradation by enabling the continuation of illegal and destructive mining activity (Pearce 2003).

As most operations committing these abuses are at least partly regularized, and some appear completely regularized and legal, it is tempting to frame such forms of regularization as virtual "Baudrillardian simulacra" (Mosse 1999, p. 4). Where complicity between officers and miners is as pervasive as this thesis has found, it seems doubtful that a greater number of mining officers would lead to any improvement in monitoring quality, and therefore to better ecological outcomes. Furthermore, the lack of recording of transgressions casts doubt over the accuracy of state-recorded data on the sector, further heightening the demand for independent research on the sector.

9.4.4. Socio-ecological dynamism

Formalization advocates often employ de Soto's (2000) argument to advocate for property rights as a basis of long-term stable management of the resource. For them, the presence of the right stimulates prudent management and enables the owner to use their property as a source of collateral to access credit (Siegel & Veiga 2009). For the regulator, it can provide a framework for holding miners to account. The raw reality of short-term, dynamic, profit-driven mining activity in Guyana however appears to strongly undermine these characteristics, suggesting that formal institutions alone are no guarantee of positive environmental outcomes in the sense that de Soto imagined (Seccatore et al. 2014).

On the contrary, as miners face fixed labour and fuel costs regardless of gold recovery – and operate under permanent debt pressures – they typically seek to maximize the velocity of extraction in each location for as long as it remains economical (Lanzano 2018). Such characteristics are clearly in stark contrast to those of farming activity where the farmer is incentivized to nurture the land for long-term exploitation. Moreover, because lenders know that mining is essentially a question of chance and that chasing up errant loanees across impenetrable jungle is beyond their means, most miners reported that they found it impossible to access bank credit, further undermining de Soto's (2000) arguments in favour of formal property rights in the context of ASM (Siwale & Siwale 2017).

The ultimate uncertainty around the location and nature of gold deposits meanwhile means that minimizing 'needless' forest loss may be impossible, in spite of hopes by some that ASM can be made more efficient (Seccatore et al. 2014). As was seen in Guyana's case, where more efficient mining does emerge, the lack of neutrality in the

dissemination of prospecting information means that it will be the larger miners with the political influence – as well as with the financial capacity to afford 'cleaner' technologies – who will benefit: poorer miners' methods will continue to be haphazard.

Although the formal framework does provide the regulator with a transparent means within which to hold the miner to account, subtle socio-ecological and socio-technical dynamics inherent to alluvial mining are appearing to overwhelm the regulator's ability to police the properties' boundaries in Guyana. For example, even where all regulations are followed, externalities from mining, such as mercury run-off, tailings leakages, or diversions of creeks and rivers, are difficult to avoid in the context of a dynamic and unpredictable tropical environment (Miserendino et al. 2013). As was seen in the case studies, even where miners attempt to take precautions by building tailings dams and ponds, breaches are common in the event of a sudden and intense storm. From a regulatory point of view, time-lag dynamics make holding miners to account for these transgressions particularly difficult, as perpetrators can move in and out of an area in a matter of weeks, leaving no trace that they were there beyond the degradation left in their wake (Sinding 2005).

Finally, the ever-evolving character of recovery technologies – which create continuous possibilities for new frontiers to be opened up (and for previously-worked areas to again be viable) – means that legal-institutional measures to preserve areas for rehabilitation or restoration may have limited impact – and may indeed by unwise uses of resources. Thus, although Hirons et al. (2014) and others have expressed some optimism about the possibilities of long-term rehabilitation of mined-out areas, technological developments make it difficult to ever consider a mining gold-bearing area to be 'exhausted'. This suggests that 'dealing' with deforestation may be better served by encouraging the continuation of mining in established mining areas and in trying to protect those areas that have not yet been breached. Whether miners will be content to be contained within what some have proposed as 'reserves or 'zones' when there is a rumour of gold lying outside the boundaries is another matter (Corbett et al. 2017; Smith et al. 2018).

9.5. Storylines and the political ecology of ASM reform

9.5.1. Storylines and the politics of reform

The characterization of ASM reform approaches as 'storylines' has arguably highlighted the capacity of a political ecology lens to offer a perspective of policies as not simply disembodied, disinterested, technical interventions, but as those connected to particular epistemological rationalizations and political judgements (Keeley & Scoones 2003). According to this understanding, what gets recognized or ignored in policy is inherently contingent; moreover, a policy's success could be considered in terms of its ability to offer a coherent narrative about reality. From this perspective, finding more inclusive and effective policy pathways may begin by illuminating alternative realities and counter-narratives (Forsyth 2004).

This thesis has done exactly this by highlighting through empirical study how realities on the ground diverged from the idealizations and simplifications of the different components of the policy storyline. Dissonances between the mainstream assumptions and on-the-ground realities revealed a range of conflicts, contestations, and counter-narratives around the perceptions of environmental change, responsibility for mining degradation, the bases of tenure, and policy form and function that were under-examined or ignored altogether in the mainstream storyline and its accompanying policy practices. For actors on the ground, these dimensions were variously perceived to be being ignored *deliberately* (as the state had an interest in perpetuating one group's advantage or another's disadvantage) or *inadvertently* (simply through a lack of analysis). As the previous sections in this Chapter showed, dissonances between assumption and reality were not only sources of injustice and legitimacy for multiple communities and constituencies in their own right but were also influencing the effectiveness of policy implementation.

The findings suggest that presiding over a 'green' transition is an inherently political act entailing key questions of justice (Newell & Mulvaney 2013; Scoones et al. 2015). As well as the fact that the green mining agenda in Guyana is being contested at the discursive and political level (as was explored particular in Chapter 5), the diffusion of technical solutions is clearly being mediated by political, economic, and ecological factors. Further, the course of action taken is having differentiated implications for certain groups in certain places who are attempting to contest and resist the direction being taken.

The persistent tendency to ignore such political phenomena for strategic and political reasons – and the moral and ethical issues they embody – is arguably contributing to an approach in Guyana that lacks legitimacy and local support, ignores or exacerbates pre-existing inequalities, and may be turning a blind eye to – or failing to address – significant drivers of both degradation and exclusion. Indeed, it was seen that policy approaches, from both government and NGOs, tended not to acknowledge or confront politically-contentious dimensions, such as land access or distribution – a failure that clearly threatens the effectiveness of the intervention. Such instances ultimately endanger the credibility of agendas that may be important in managing locally-relevant mining-environment relationships.

From a theoretical perspective, the findings thus make the case for thinking about even formalized 'legal-institutional' mining spaces as 'political spaces' whose boundaries are subject to discursive and political contestation, and within which mining realities – despite the appearance of order suggested by the formal demarcations – are inherently characterized by informality, dynamism, contestation, and social struggle. Such a view is consistent with the idea that mining spaces possess complex histories and entail overlapping spatial and temporal dimensions that do not end once formal grid-lines have been superimposed onto a map (Rocheleau 1995; Bridge 2007; Peluso 2012). Embedding reform approaches in the kinds of intimate political ecologies of knowledge and place that have been illuminated in this thesis thus appears as a preferable policy approach – though one that represents a more challenging undertaking, and one that is bound to be contested.

9.5.2. A political ecology of ASM reform

In answering the thesis's over-arching question – 'In what ways does a political ecology lens challenge mainstream storylines (and associated policy directions) about ASM reform in Guyana?' – it is argued that the engagement with a range of theoretical stances and normative concerns has highlighted the value in taking a more holistic approach to the analysis of ASM reform that seeks to go beyond the binary characterizations of the 'policy' and 'academic' debates (Hilson & Maconachie 2017). As well as highlighting a range of normative concerns and counter-narratives that often get excluded from discussions on ASM reform (such as detailed examinations of the discourses on

indigenous land claims and dynamic socio-ecological interactions), the approach has shown that the objects of interest of various critiques (whether 'policy success' or 'social marginalization') intersect and interact with each other in complex ways, with analytical categories typically associated with 'critical' research appearing to strongly influence the more orthodox policy concerns of 'effectiveness'.

For example, land insecurity caused by landlordism (a focus of 'structural' analysis) appears to be undermining the ability of smaller miners to adhere to regulations in Guyana, thus harming the environmental aim of interest (a focus of 'pragmatic' analysis). Similarly, the increasing depth and remoteness of gold deposits (a 'technical' concern more common to 'pragmatic' analysis) is contributing to the marginalization and exclusion of smaller operators that 'structural' critics may often blame purely on insensitive state policies, for example.

The capacity to recognize a range of normative concerns while also engaging with the complex interactions between these different elements is thus the ultimate achievement of the political ecology approach to ASM reform taken in this thesis, and it is why political ecology can ultimately be considered 'useful' in helping to inform more inclusive and effective policies (Blaikie 2012).

9.6. Conclusion

This chapter has synthesized the findings from across the empirical material from this thesis to explain their implications for the theoretical debates on ASM and ASM reform, thus answering research sub-question four. While the mainstream storyline on formalization-centred ASM reform sketches out a journey of reform through the rational-scientific identification of the problem, the installation and introduction of legal institutions and other supporting financial and technological policies, and a monitoring and enforcement approach that will support the outcome, the case of Guyana has illustrated the actually-existing complexity and contention that undermines this technocratic vision of reform. The contrasts between the mainstream assumptions and the realities on the ground are summarized in Table 9.1.

As well as outlining how the thesis made contributions to the literature on the politics of environmental knowledge and property rights and ASM – in the areas of exclusion, informality, legitimacy, and effectiveness – the chapter made some more general

conclusions about the value of the methodological approach taken in this thesis. While arguing that the analytic device of the 'storyline' has opened up analysis of ASM reform to the understanding of policies as comprising material as well as discursive effects, it also underlined that the political ecology approach has been valuable in recognizing a range of interacting normative concerns that are usually examined with respect to an empirical context in isolation. In advocating for further studies on ASM and ASM reform in the political ecology tradition, the chapter concluded that the form of analysis taken has been effective in highlighting the intersections and interactions between a range of phenomena, offering new insights on the 'value' of political ecology.

Table 9.1: Summary of contrasts between mainstream storyline assumptions and reality

Storyline component	**Mainstream assumption**	**Political ecology reality**
1. Mining-environment relationship	ASM miners, particularly the illegal ones, are causing negative environmental and social impacts	Environmental problems related to mining are viewed differently by a range of actors Actual mining activity is dynamic and messy, confounding narratives about who is doing what, and why. Further, the binary understanding of good/legal vs bad/illegal doesn't hold
2. Formal institutions	Formal institutions are the legitimate way of dealing with the problem identified above The state can install these institutions If designed correctly, and if support is provided, institutions won't exclude poorer miners	Formal institutions are not readily accepted and the boundaries and distribution of properties upon which reforms are predicted are contested by a range of actors Alternative forms of authority and governance and discretionary practices can emerge to overwhelm the form and function of formal rules Regulations interact with other socio-ecological phenomena to exclude small miner participation, in spite of policies to address land access
3. Mechanisms of change	The existence of the formal institutions, overseen by the state, will be effective in guiding miners towards improved mining practices.	Dynamic socio-ecological factors undermine the form and function of formal institutions and rules

Source: Author

Chapter 10: Conclusion

10.1. Introduction

This thesis has sought to better understand the dynamics of a formalization-centred policy approach to 'greening' Guyana's small-scale mining sector. As well as being interested in how effective such a strategy has been for seeking to minimize the ecological footprint of small-scale mining, the thesis has also been interested in how such an agenda has affected land users – particularly poorer scales of miners and Amerindian communities. Stepping even further back, the thesis has also sought to re-appraise critically the assumptions upon which such a policy agenda has been predicated – both to establish the epistemological legibility of the approach in its own right, and to examine how potential misreadings of the Guyanese context may, in turn, be contributing to policy ineffectiveness or social marginalization. In this concluding chapter, the thesis will be summarized by showing how the research questions were answered, and the thesis's empirical, theoretical, and methodological contributions will be outlined.

10.2. Thesis summary and contributions

Chapter 1 introduced the topic, outlined the thesis structure, and provided a conceptual framework. Chapter 2 then introduced the political ecology approach as a theoretical stance and discussed the conventional rationalization for ASM reform and outlined the mainstream storyline and its components, before outlining three critiques – pragmatic, structural, and post-structural. It then explained how a political ecology approach to ASM reform could improve on these three approaches by simultaneously assessing a range of normative concerns, while also investigating interactions between different elements typically limited to analysis within each tradition. It explained how the 'storyline' device could be used to guide this epistemologically-informed analysis of ASM reform.

The methodological approach derived from the theoretical discussion was outlined in Chapter 3. After outlining the ontological and epistemological perspective of the thesis, it then rationalized Guyana and the three case sites as case study choices, and then discussed and justified in more detail the methods that were used. It explained how the

data was analysed and synthesized in order to respond to the theoretical framework before discussing relevant ethical issues and methodological challenges.

Chapter 4 then sought to directly address question 1: 'What are the unique national political ecologies of gold mining in Guyana?' The chapter used a broad range of data to illustrate the main political-economic, socio-technical, socio-ecological, administrative, and socio-economic dimensions of the sector. It found that the sector has expanded dramatically in the past ten years, facilitated by a more liberal institutional environment, the increasing availability of cheap machinery, a growing speculative interest in mineral lands, and a dramatic rise in the world gold price. This has increased the spatial occupation of the sector and has increased competition for – and conflict over – land between different users, while also worsening the ecological impacts of the mechanized dredging activity. As well as an increase in dredge and mineral property numbers, the liberalized sector has experienced an increase in land concentration, a phenomenon that has had serious implications for landless one-dredge owners.

Chapter 5 then turned to question 2: 'How does the mainstream 'storyline' on formalization-centred environmental reform articulate itself in this context?' This chapter found that the reform approach has been strongly shaped by the national political ecology of mining, with reforms appearing as more of a consolidation of prior formalization efforts. It also found that international organizations and discourses have had a strong influence in shaping local policies, which have been resisted and re-shaped by local actors. Despite remaining close to the mainstream storyline identified in Chapter 2 that appears to uphold a belief in the possible coexistence of small-scale gold mining and 'sustainable development' aims, miners have increasingly found that the state appears to be taking a more top-down, large-scale- mining-friendly approach to the sector that is marginalizing smaller operators.

Chapters 6, 7, and 8 entailed three case studies, which were used to examine the ways in which the local, Guyanese articulation of the mainstream reform storyline identified in Chapter 5 diverged from actual experiences on the ground across differing institutional, geographical, socioeconomic, and cultural contexts within the mining landscape. Within each chapter and across each site the following question was asked: 3. 'To what extent

do reform experiences across different political ecologies of mining in Guyana disrupt the mainstream 'storyline' about formalization-centred policy approaches?'

It was found that assumptions underpinning the storyline's components conflicted with the realities on the ground in contrasting ways across the case studies sites, and that a range of phenomena challenged the assumptions underpinning the technocratic ASM reform agenda. For example, while it was assumed that the nature – and causes – of environmental problems related to mining were taken for granted, there were in fact contested local understandings of environmental change and responsibility that were inherently place-specific. And while installing, introducing, and enforcing formal institutions was considered an unproblematic and frictionless task, in reality the process was clearly threatening to exclude many smaller operators (as the case in Potaro Mining District showed), as well as being predicated on contested structural bases of land tenure, (as was seen in the cases of Maicobie and Kangaruma-Tasserene). Finally, while a formal framework was assumed to be an effective way of governing mining, it was evident that inherent 'informality' amidst intense resource competition, state fragility and subtle socio-ecological processes were challenging the effectiveness of formal institutions in securing the desired outcome, with varying implications for those living and working in the landscape.

Finally, in answering question 4 – 'What are the implications of these findings for the theoretical and policy debates on formalization-centred policy approaches to 'green' or 'sustainable' mining?' – in Chapter 9, an attempt was made to synthesize findings from the thesis in order to establish its overall contributions. These are separated here into empirical, theoretical, and methodological contributions.

10.2.1. Empirical contributions

Empirically, the thesis contributes to the expanding body of knowledge of the political economy-ecology dimensions of small-scale alluvial mining in South America, including in indigenous Amerindian land settings (e.g. Heemskerk 2001a, 2001b, 2005; Heemskerk et al. 2015; Hennessy 2015; Bulkan & Palmer 2016; Hilson & Laing 2017b; Seccatore & de Theije 2017). It also provides an important case study on the development and implementation of 'green' ASM formalization agendas (Hirons 2011b); and on how such policies play out across a variety of institutional and socio-cultural settings. As small-

scale mining sectors in other countries move towards Guyana's more technically advanced and regularized forms of mining, this thesis may be useful in informing debate in those contexts.

10.2.2. Theoretical contributions

The established, formalized nature of Guyana's mining sector enabled a valuable opportunity to appraise how various theoretically-backed warnings and predictions about how formal institutions will play out in practice actually bear out in reality (e.g. Fisher 2007; Spiegel 2009a; Geenen 2012; Putzel et al. 2015; Hilson et al. 2017; Siwale & Siwale 2017). In this regard, the thesis makes several specific contributions to knowledge about the politics of environmental policy, ASM and formal institutions, and the socio-ecology of ASM reform.

10.2.2.1. The politics of environmental knowledge

The thesis offers an illustration of the inherently political nature of the environmental policy process, and the contingency of environmental policy form on the political judgements and capacities of states (Keeley & Scoones 2003; Lewis & Mosse 2006; Ongolo & Karsenty 2015). While research has looked at these dimensions in other areas, there is currently minimal research specifically examining the construction of 'green' ASM reform narratives (c.f. Hirons 2011b; Bersaglio & Cleaver 2018). As well as the fact that environmentally-oriented mining policies may have differentiated effects on different groups – a fact acknowledged by many ASM scholars looking at formalization policies – the nature of policy knowledge was shown here to be a source of unappreciated contestation and disagreement (Veiga & Hinton 2002; Tschakert 2009). In this case, the state is failing to properly address the lack of consensus among miners about the environmental impacts of mining, while also failing to acknowledge indigenous participation in mining. While the former oversight is being caused by a lack of education and technical support for miners to assist them with adhering to the new requirements, the latter is leading to a total absence of resources for Amerindians who are interested in improving their own mining practices (Lahari-Dutt 2017; Siwale & Siwale 2017). So, although the epistemological illegibility of policy should be seen as a concern *in its own right*, it is argued that failing to address these under-acknowledged factors in policy may also be contributing to a lack of policy buy-in, resentment, and ultimately, to ineffective outcomes. This suggests that seeing some issues as 'policy' concerns and others as

'academic' concerns may overlook the interactions between different observers' objects of interest, and may fail to engage with the ways in which one normative concern (say, the adequate provision of training or financial assistance) shapes another (such as policy effectiveness).

10.2.2.2. ASM and the inclusion, form, and legitimacy of formal institutions

The thesis also makes specific contributions to the literature on property rights and ASM – on inclusion, informality, and legitimacy. While formalization is often characterized as an 'end-point' that will programme out all conflict and exclusion, while enabling participation and mitigating 'negative' social and environmental impacts, the thesis illustrated how new forms of exclusion may unexpectedly and dynamically emerge within formal structures as a result of persistent and powerful political currents (Clausen et al 2011; Verbrugge 2015a; Peluso 2018). Building on existing knowledge about exclusion, it showed how it may not only be social forces that drive exclusion, but also subtle socio-ecological dimensions, such as mineral depth and scarcity (Hilson 2010; Bakia 2014; Lanzano 2018). Although generally finding that both the state and smaller miners initially benefited from a (progressively) formalized mining system in Guyana, the findings showed how gains can be lost – and inclusion and participation can be eroded. In Guyana, not only has the state somewhat lost sight of its erstwhile progressive approach to the small-scale mining sector; elite interests have also been allowed to leverage their political and economic power to reshape 'resource governmentalities' in their own interests (Bulkan & Palmer 2016; Verbrugge & Besmanos 2016). The thesis also however underlined the dialectical nature of social struggle, in illustrating how groups have fought back to re-gain some control over resources in Guyana, as was seen with the agitation for – and emergence of – the syndicate policy (Peet et al. 2010).

While highlighting the ever-presence of power and politics within society, the thesis also underlined the tendency for small-scale mining activities to drift towards informality (Van Bockstael 2014; Echavarria 2014; Hilson et al. 2017; Côte & Korf 2018; Peluso 2018). In all three case studies, new forms of authority and governance emerged from within the formal system. While some of these arrangements were sources of flexibility, others represented the entrenchment of elite interests or – in the case of endemic corruption – were fuelling degradation and undermining the credibility of the regulator. Due to the variable effects of these drifts to informality (with some proving more benign

than others) those examining ‘legality’ and ‘formality’ should perhaps be more concerned with institutional *form* than strict institutional *function* (Cleaver 2017; Ho 2018; Ofori & Ofori 2018).

Finally, it illustrated the importance of ensuring the legitimacy of formal property institutions (Schlager & Ostrom 1992; Ostrom & Janssen 2005; Clausen et al. 2011). In Guyana today, some of the most significant debates within the interior relate to the perceived injustice and inequity of land tenure institutions, particularly those institutional formations affecting small-scale miners and Amerindian communities (Hilson & Laing 2017b). So, while Hilson and Maconachie (2017, p. 447) (perhaps rightly) celebrate mineral property rights for the “superior” tenure security that they offer for *miners*, the thesis showed that this does not necessarily mean that these right and boundaries will not be contested (or considered unjust) by other land claimants – particularly indigenous villagers. The failure to address and resolve these claims of illegitimacy appears to be undermining the willingness among all actors to participate in state initiatives, potentially threatening ecological aims of interest and worsening conflict and instability.

10.2.2.3. The effectiveness of formal institutions

Thirdly, to the environmental policy literature on the practicalities of greening the ASM sector (e.g. Hinton et al. 2003; Vieira 2006; Hirons et al. 2014; Seccatore et al. 2014; Veiga et al. 2014; Corbett et al. 2017; Hund et al. 2017), the thesis illustrated the possible limitations of formal rules and institutions in securing their anticipated outcomes. The transboundary impacts of mining, for example, illustrated the limitations of linear rules and regulations in containing the externalities of mining. The unavoidable reality of the increasing depth and scarcity of minerals meanwhile highlighted the fact that social solutions to enabling ‘green’ mining participation for smaller-scale miners may come up against ecological barriers. Finally, the thesis highlighted that institutional design can become meaningless if actors do not adhere to the policy ‘script’ (Crawford & Botchwey 2017): as was seen throughout, both miners and Mines Officers in Guyana regularly engage in corrupt deals, ultimately undermining the integrity of the formal system and contributing to ecological degradation.

10.2.3. Methodological contributions

Finally, the thesis makes a significant methodological contribution to the study of ASM reform by operationalizing a hybrid political ecology research programme. As well as engaging with post-structural political ecology to unpack environmentally-informed ASM discourses (Hirons 2011b), the thesis simultaneously engaged in detailed, empirical, site-based study to examine how the micro-practices and micro-politics of mining are being re-shaped – and resisted – on the ground. It also examined the complex socio-ecological and material-discursive interactions that constitute the 'green' ASM reform process in Guyana (building on the more technocratic explorations of the concept in IADB (2017)). Such an approach meant bringing together insights and analytical tools from a range of sub-disciplines that are typically not combined, including agrarian studies and environmental policy studies. It also entailed exploiting a diverse range of methods, including GIS data analysis and more ethnographic, site-based techniques.

By using the framing analytic device of the 'storyline' (Hajer 1995), the approach was able to highlight a range of normative concerns across the case study sites that challenged mainstream technocratic and managerial narratives and enabled an engagement with a diverse set of critiques. While identifying and problematizing underlying epistemological assumptions that underwrite mainstream policy approaches is often dismissed as a mere 'academic' concern that is of no utility to policy makers (e.g. Hilson & Maconachie 2017), it was argued throughout that the illumination of counter-narratives that disrupt dominant representations can ultimately reveal pathways towards more inclusive *and* effective interventions (Blaikie 2012). Indeed, as well as recognizing that there is often an *instrumental* justification for engaging with different actors' political concerns and grievances (i.e. because a failure to do so may contribute to ineffective policy outcomes), the thesis made the case that there is an overriding *moral imperative* to engage with and attempt to address and resolve such grievances (Bryant & Bailey 1997; Forsyth 2004; Robbins 2011).

Overall, the application of a hybrid political ecology lens to the study of ASM reform in Guyana has offered a re-framing of the often- technically-minded debates on how to 'deal with' small-scale gold mining in the context of contemporary environmental challenges. It has argued that what is often seen as a 'techno-institutional' process should rather be

seen as a ‘political’ one. Not only has the thesis broadened the range of normative concerns to include those of a range of participating and affected actors whose interests may often be overlooked; but it has also highlighted the fact that technical ‘success’ must be recognized as inherently entangled in the political ecologies of knowledge and place. This means acknowledging the complex socio-ecological and political dimensions that may shape policy success. It also means remaining reflexive about the assumptions that underlie the approach being taken – and indeed the objectives of the agenda itself. Finally, it means ensuring that ‘dealing with’ climate change (and other environmental challenges) is carried out in a ‘just’ and participatory manner that avoids worsening existing – or generating new – sites of injustice (Newell & Mulvaney 2013). In presenting such an approach, this thesis has made significant contributions to the interlinked (and as-yet only incipient) academic and policy debates on ‘green’ transitions in the ASM sector – with implications for Guyana and beyond.

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Annex I: Environmentally-oriented mining interventions in Guyana

Year	Intervention name	Funding agency	Executing agency	Activity
1996	Guyanese inter-agency cooperation	Government of Guyana	GGMC, EPA	MOU signed between the GGMC and the EPA
1996 -2004	GENCAP	Canadian Government	GGMC	Training for miners; scientific studies
2005	Amendments to Mining Act and introduction of Codes of Practice	Canadian Government	GGMC	Regulations and Codes of Practice drafted
2005	Reducing the Pressure of Goldmining on the Guianas Ecosystem	WWF-Guianas	WWF-Guianas, GGMC	Training programmes; studies
2013 -	Land restoration projects	GGMC	GGMC	Re-vegetation and land restoration
2013	Guyana Mining School and Training Institute (GMSTI) set-up	WWF, UNDP	GGMC	Equipment and training materials developed
2014	Biodiversity mainstreaming in the mining sector	UNDP, GEF	UNDP, GGMC, GFC	Capacity-building for state monitoring agencies
2016	Global opportunities for long-term development of the ASGM sector	CI-Guyana, GEF	CI-Guyana, GGDMA, GGMC	Testing of mercury-free technologies
2017	Strengthening the enabling framework for biodiversity mainstreaming and mercury reduction in small-scale gold mining operations	GEF	UNDP, GGMC, EPA, MNRE	Capacity-building for state monitoring agencies; resources for miner training and education

Annex II: Fieldwork schedule

Date	Location	Activity
May 2016 – July 2016	Arrive in Guyana. Based in Georgetown.	Scoping interviews with Georgetown-based policy and government actors, miners, NGOs, and Amerindian organizations.
August 2016	Return to UK.	Transcribe interviews. Set up interviews and check on permits.
September 2016 – December 2016	Guyana, largely Potaro district. Some Georgetown-based interviews and data collection.	Ethnographic research and interviews in Potaro.
January 2017 – February 2017	Return to UK.	Transcribe interviews. Review and filter GIS and quantitative data.
March 2017 – June 2017	Guyana: Bartica, Kangaruma, Maicobie, and Potaro. Georgetown.	Ethnographic research in Kangaruma, Maicobie, and Potaro. Final interviews in Georgetown.
July 2017 –	Return to UK.	Data analysis and thesis write-up.

Annex III: Interview schedule

No.	Category	Gender	Place	Date
1	Amerindian organization	F	Georgetown	15/05/2016
2	Amerindian organization	F	Georgetown	15/05/2016
3	Government official	F	Georgetown	16/05/2016
4	Government official	M	Georgetown	18/05/2016
5	Mining sector	M	Georgetown	19/05/2016
6	Government official	F	Georgetown	19/05/2016
7	Amerindian organization	F	Georgetown	23/05/2016
8	NGO	M	Georgetown	25/05/2016
9	NGO	M	Georgetown	30/05/2016
10	Amerindian organization	M	Georgetown	30/05/2016
11	NGO	F	Georgetown	31/05/2016
12	Private sector	M	Georgetown	01/06/2016
13	Government official	M	Georgetown	01/06/2016
14	Government official	M	Georgetown	02/06/2016
15	NGO	F	Georgetown	03/06/2016
16	NGO	F	Georgetown	05/06/2016
17	NGO	F	Georgetown	06/06/2016
18	NGO	F	Georgetown	07/06/2016
19	Amerindian organization	M	Georgetown	07/06/2016
20	Mining sector	M	Georgetown	07/06/2016
21	Government official	M	Georgetown	08/06/2016
22	Mining sector	M	Georgetown	09/06/2016
23	NGO	M	Georgetown	10/06/2016
24	NGO	F	Georgetown	12/06/2016
25	NGO	M	Georgetown	13/06/2016
26	Government official	M	Georgetown	13/06/2016
27	Academia	F	Georgetown	13/06/2016
28	Academia	F	Georgetown	14/06/2016
29	NGO	M	Georgetown	15/06/2016
30	Government official	M	Georgetown	16/06/2016

31	NGO	M	Georgetown	04/07/2016
32	Government official	M	Georgetown	05/07/2016
33	NGO	F	Georgetown	05/07/2016
34	NGO	F	Georgetown	05/07/2016
35	NGO	F	Georgetown	05/07/2016
36	Government official	M	Georgetown	07/07/2016
37	Government official	M	Georgetown	08/07/2016
38	Amerindian organization	M	Georgetown	11/07/2016
39	Amerindian organization	M	Georgetown	14/07/2016
40	Government official	M	Georgetown	27/09/2016
41	NGO	M	Georgetown	28/09/2016
42	Government official	F	Georgetown	01/10/2016
43	Academia	F	Georgetown	03/10/2016
44	Amerindian organization	F	Georgetown	05/10/2016
45	Mining sector	M	Georgetown	08/10/2016
46	Government official	F	Georgetown	10/10/2016
47	Mining sector	M	Georgetown	10/10/2016
48	Government official	M	Georgetown	10/10/2016
49	Private sector	M	Georgetown	11/10/2016
50	Government official	M	Georgetown	11/10/2016
51	Amerindian organization	M	Georgetown	12/10/2016
52	NGO	F	Georgetown	13/10/2016
53	Government official	M	Georgetown	14/10/2016
54	Government official	M	Georgetown	14/10/2016
55	Government official	M	Georgetown	14/10/2016
56	Amerindian organization	M	Georgetown	20/10/2016
57	Amerindian organization	M	Georgetown	25/10/2016
58	NGO	F	Georgetown	01/11/2016
59	Mining sector	M	Georgetown	01/11/2016
60	Mining sector	M	Georgetown	02/11/2016
61	Government official	M	Georgetown	04/11/2016
62	Government official	M	Potaro	06/11/2016
63	Mining sector	M	Potaro	08/11/2016

64	Mining sector	M	Potaro	08/11/2016
65	Mining sector	M	Potaro	09/11/2016
66	Government official	M	Potaro	09/11/2016
67	Government official	M	Potaro	11/11/2016
68	Government official	M	Potaro	11/11/2016
69	Government official	M	Potaro	14/11/2016
70	Mining sector	F	Potaro	14/11/2016
71	Mining sector	M	Potaro	14/11/2016
72	Government official	M	Potaro	17/11/2016
73	Mining sector	M	Potaro	17/11/2016
74	Mining sector	M	Potaro	17/11/2016
75	Government official	M	Potaro	19/11/2016
76	Mining sector	M	Potaro	20/11/2016
77	Government official	F	Potaro	21/11/2016
78	Mining sector	M	Potaro	22/11/2016
79	Mining sector	M	Potaro	24/11/2016
80	Mining sector	M	Potaro	24/11/2016
81	Mining sector	M	Potaro	25/11/2016
82	Mining sector	M	Potaro	28/11/2016
83	Mining sector	M	Potaro	29/11/2016
84	Mining sector	F	Potaro	04/12/2016
85	Government official	M	Potaro	07/12/2016
86	Mining sector	M	Potaro	11/12/2016
87	Government official	M	Georgetown	14/12/2016
88	Government official	M	Georgetown	08/03/2017
89	Government official	M	Georgetown	08/03/2017
90	Mining sector	M	Georgetown	11/03/2017
91	NGO	M	Georgetown	14/03/2017
92	Government official	M	Georgetown	14/03/2017
93	Government official	M	Georgetown	15/03/2017
94	Government official	M	Georgetown	16/03/2017
95	NGO	F	Georgetown	17/03/2017
96	Government official	F	Bartica	28/03/2017

97	Mining sector	M	Bartica	29/03/2017
98	Mining sector	M	Bartica	29/03/2017
99	Mining sector	M	Issano	30/03/2017
100	Mining sector	F	Issano	03/04/2017
101	Amerindian villager	M	Tasserene	03/04/2017
102	Mining sector	M	Issano	04/04/2017
103	Amerindian villager	M	Kangaruma	04/04/2017
104	Amerindian villager	M	Kangaruma	04/04/2017
105	Amerindian villager	M	Kangaruma	05/04/2017
106	Amerindian villager	M	Kangaruma	05/04/2017
107	Amerindian villager	F	Kangaruma	06/04/2017
108	Mining sector	M	Kangaruma	07/04/2017
109	Amerindian villager	M	Kangaruma	08/04/2017
110	Amerindian villager	M	Kangaruma	10/04/2017
111	Mining sector	M	Kangaruma	10/04/2017
112	Mining sector	M	Kangaruma	10/04/2017
113	Amerindian villager	M	Kangaruma	10/04/2017
114	Amerindian villager	M	Kangaruma	13/04/2017
115	Amerindian villager	M	Kangaruma	14/04/2017
116	Amerindian villager	F	Maicobie	27/04/2017
117	Amerindian villager	M	Maicobie	28/04/2017
118	Mining sector	M	Maicobie	29/04/2017
119	Amerindian villager	M	Maicobie	30/04/2017
120	Amerindian villager	F	Maicobie	02/05/2017
121	Amerindian villager	F	Maicobie	02/05/2017
122	Amerindian villager	M	Maicobie	03/05/2017
123	Amerindian villager	F	Maicobie	04/05/2017
124	Amerindian villager	F	Maicobie	04/05/2017
125	Amerindian villager	F	Maicobie	04/05/2017
126	Amerindian villager	M	Maicobie	04/05/2017
127	Amerindian villager	M	Maicobie	04/05/2017
128	Mining sector	M	Maicobie	04/05/2017
129	Mining sector	M	Maicobie	06/05/2017

130	Amerindian villager	M	Maicobie	07/05/2017
131	Mining sector	M	Maicobie	08/05/2017
132	Mining sector	M	Maicobie	09/05/2017
133	Mining sector	M	Potaro	12/05/2017
134	Mining sector	M	Potaro	13/05/2017
135	Mining sector	M	Potaro	15/05/2017
136	Mining sector	M	Potaro	16/05/2017
137	Mining sector	M	Potaro	16/05/2017
138	Mining sector	M	Potaro	16/05/2017
139	Mining sector	M	Potaro	16/05/2017
140	Mining sector	M	Potaro	17/05/2017
141	Government official	M	Georgetown	19/05/2017
142	Mining sector	M	Georgetown	19/05/2017
143	Government official	F	Georgetown	22/05/2017

Annex IV: Sample interview questions

Mining realities

What are the main challenges for you as a miner today?

What should the government do to address these challenges?

Why do you think the government has brought in a syndicate policy?

Do you think it will solve small miners' problems?

Mining-environment relationship

Do you believe that mining has any negative environmental impact?

What do you think the main impacts are?

What/who do you think is responsible for these impacts?

How could these impacts be addressed?

On environmentally-oriented mining reforms

Are you aware of the government's environmentally-oriented mining reforms?

Have you been affected by these?

Why do you think the government has brought in these measures?

Annex V: Sample informed consent form

UNIVERSITY OF SUSSEX

CONSENT FORM FOR PROJECT PARTICIPANTS

Andrew Hook, University of Sussex
A.Hook@sussex.ac.uk

Project Title: **The political ecology of small-scale gold mining reform in Guyana: resource competition, formalization, and green development pathways**

Project Approval Reference: ER/AH521/3

Please tick the appropriate boxes	**Yes**	**No**
I have had the project explained to me and I have read and understood the Information Sheet, which I may keep for my records.	☐	☐
I agree to take part in the project. In agreeing to take part I am willing to:		
- Be interviewed by the researcher;	☐	☐
- Allow the interview to be audio taped; and	☐	☐
- Make myself available for a further interview should that be required.	☐	☐
I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.	☐	☐
I understand that all information I provide will be treated as strictly confidential and handled in accordance with the Data Protection Act 1998.	☐	☐
I consent for my words to be quoted in publications, reports, web pages, and other research outputs provided that these words are not attributed to me and that my identity will be totally anonymized.	☐	☐
I understand that all records will be kept securely in encrypted and password-protected formats only accessible to the researcher.	☐	☐
I understand that I will be given a transcript of data concerning me for my approval before being included in the write-up of the research.	☐	☐
I consent for the data I provide to be archived in the Economic and Social Research Council archive.	☐	☐
I acknowledge that I have been supplied with the contact details of the researcher should I need to contact them at any time about my participation in the study.	☐	☐

Name: ……

Signature: ……

Date: ……